University of Alberta

The Impact of the Board of Directors on Top Management Compensation

by

Loretta Mary Amerongen

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

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Loretta Amerongen

Aug 19, 1996

9706 - 86 Avenue
Edmonton, Alberta, Canada
T6E 2L4

University of Alberta

Faculty of Graduate Studies & Research

The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Impact of the Board of Directors on Top Management Compensation submitted by Loretta Mary Amerongen in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Accounting.

Dr. L. Daley

Dr. C.R. Hinings

Dr. A. Buse

Dr. H. Wier

Dr. R. Vigeland

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ABSTRACT

In this research I conduct a paired examination of the impact of the board of directors on levels and variability of top management compensation. A paired investigation of levels and variability of compensation enables one to distinguish between agency theory explanations and managerial power theory explanations for observed results. Agency theory models assume that the manager has no power to exert his influence in the negotiation of his compensation contract. The predictions of agency theory with respect to management compensation may be defeated in the presence of managerial power. A powerful and risk averse manager may be able to avoid optimal risk sharing by either increasing the level of his compensation without a commensurate increase in the riskiness of his compensation or by decreasing the riskiness of his compensation with no impact on the level of his compensation.

Firstly I separately investigate managerial power theory and agency theory as determinants of management compensation. The focus of the agency theory model is on the monitoring role of corporate directors. Using a non-nested test I determine that the agency theory model has greater explanatory power with respect to management compensation than the managerial power model. However, some of the observed results for both of the models are more consistent with a managerial power theory explanation than an agency theory explanation. Based on this observation I reinterpret the results for both models. Over-all I find that the board of directors does have a significant impact on management compensation, however, the results are not supportive of the monitoring view of the board of directors with only two of the board and

ownership measures providing results consistent with a monitoring hypothesis. Five of the board and ownership measures considered in the research are consistent with the view that managerial power plays a part in the determination of management compensation. These results indicate that the empirical regularities of management compensation can best be explained by a consideration of both managerial power theory and agency theory and that it is important to examine both levels and variability of management compensation to reach reliable conclusions with respect to the relative impact of the board of directors on top management compensation.

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Chapter I

Introduction

In this research, I investigate the role of the board of directors in the determination of management compensation. Using an agency theoretic approach, I focus on the monitoring role of the board of directors and the implications that this monitoring role has for the ultimate level and variability of management compensation. This research is important for two reasons. Firstly, from an agency theory perspective the compensation contract of the top manager has important implications for shareholder wealth. When managerial actions are not observable, the predictions of agency theory imply that the optimal response of the shareholders is to impose risk on the manager of the corporation through a link between management pay and firm performance to induce the manager to act in the best interests of the shareholders (i.e. to maximize firm value). Thus, the management compensation contract is likely to be an important determinant of shareholder wealth.

Secondly, the board of directors of the corporation, as the representatives of the shareholders, are ultimately responsible for the negotiation of the management compensation contract. Board activists have been highly critical of the performance of corporate boards with respect to their position as the representatives of the shareholders. Critics of corporate boards suggest that corporate directors are relatively ineffective in protecting shareholder interests, largely because their loyalties lie with management rather than with the shareholders whom they represent. The implication of this view is that boards are ineffective because corporate managers have the power to influence board

decisions. If corporate boards are relatively ineffective in representing shareholders interests, the management compensation contracts negotiated by these boards will fail to induce the manager to act in the best interests of the shareholders. This may also have significant consequences for shareholder wealth.

From an agency theory perspective the optimal compensation contract depends both on the magnitude of the agency problem (i.e. how divergent management interests are from shareholder interests) and the extent to which monitoring of managerial actions is possible. Effective monitoring of managerial actions should result in a reduction in the level of compensation and the amount of risk sharing necessary to induce the manager to act in the best interests of the shareholders. However, a significant drawback to agency theory is that it assumes that the principal (or in this case the owners of the firm) have all of the power in the negotiation of the compensation contract. To the extent that the manager has any power in the negotiation process, the form of the compensation contract may be inconsistent with the predictions of agency theory. The critical issue of agency theory is risk sharing for incentive purposes. A powerful and risk averse manager may be able to exert his preferences for less risk in his compensation contract. When this is the case the powerful manager may not act optimally to maximize shareholder wealth.

The predictions of agency theory indicate that when more risk is imposed on the manager through the link between his pay and firm performance, expected compensation or compensation level must also increase. Thus, there should be a monotonic relationship between the riskiness of the compensation contract and the level of the manager's pay. When monitoring of managerial actions is

possible, the level of risk imposed on the manager to induce him to act in the best interests of the shareholders is reduced and both the manager and the shareholders are better off. Because of the monotonic relationship between risk and compensation, effective monitoring will result in lower expected compensation. Under the assumption that the manager is risk averse, but would prefer higher compensation to lower compensation, power on the part of the manager may manifest itself in one of two ways. The manager may be able to negotiate a compensation contract which imposes less risk on himself but has no impact on the level of his compensation. Or, the manager may be able to negotiate a compensation contract which increases the level of his compensation, with no impact on the riskiness of that compensation. In either of these two situations, there will be a deviation from optimal risk sharing between the managers and the owners of the corporation. In terms of compensation research, this means that it is necessary to examine both the level and the riskiness of the manager's compensation. In my research I address this risk/return trade-off by conducting a paired investigation of both levels and variability of compensation, where variability of compensation is a measure of the riskiness of the compensation stream.

In the first part of this thesis, I conduct a separate empirical examination of an agency theory model of management compensation and a managerial power model of management compensation. In the agency theory model, I examine the impact of various board attributes on the level and variability of management compensation. The results indicate that certain board attributes do have an impact on management compensation, although this impact is not uniformly consistent with the predictions of agency theory. In the managerial power model, I consider managerial attributes that may indicate that the

manager has the power to exert his influence in the determination of the level of his compensation. I also consider board attributes that may constrain the manager's power to obtain his preferences with respect to the level of his compensation. The results indicate that the agency theory model has greater explanatory power than the managerial power model with respect to predicting the level of management compensation. A non-nested test of the two competing models, however, indicates that neither model can be considered in isolation in predicting management compensation.

Based on this conclusion I reexamine the results for the two models from the point of view of both agency theory and managerial power theory. First, I assume that the manager would prefer higher pay to lower pay and the manager would prefer to bear less risk with respect to the performance of the firm. Their are two basic ways in which the manager may earn his compensation. The first is a flat fee for his services. In this case the manager bears no risk for the outcome of his actions. Under the assumption that the manager is risk averse, this is the alternative he will prefer. The second alternative involves both a fixed fee and an incentive component of compensation which arises from the link between compensation and firm performance. Under this alternative, all else equal, expected compensation will be higher because the manager must be compensated for bearing some risk associated with firm performance.

In the absence of managerial power, the second alternative should provide the manager with higher levels of compensation relative to the first alternative. However, a powerful manager may be able to circumvent risk sharing by negotiating a compensation contract which appears to include some form of

incentive compensation but which imposes little risk on the manager with respect to firm performance. Thus, when the manager has power to influence his compensation contract one would expect to observe either higher pay with no increase in the variability of that pay or lower variability of pay without a decrease in the level of that pay. The predictions of agency theory indicate that when monitoring is possible, less risk will be imposed on the manager with respect to firm performance. When this is the case, the expected level of compensation will be lower because the manager does not need to be compensated for greater risk bearing. In the presence of monitoring one would expect to observe both lower levels and lower variability of compensation. If one examines either levels of compensation or the riskiness of compensation in isolation, it is not possible to reach a conclusion regarding the adequacy of agency theory to explain management compensation, i.e., a decrease in the variability of compensation is only consistent with a monitoring hypothesis if the level of compensation also decreases. An observed decrease in the variability of compensation without a decrease in the level of compensation, is consistent with a managerial power perspective rather than an agency theory perspective. This means that in distinguishing between the monitoring role of the board of directors and the ability of the manager to circumvent monitoring and consequently circumvent optimal risk sharing, it is necessary to conduct a paired examination of both levels and variability of compensation. Consequently, a managerial power model regression on the variability of compensation is included in the analysis in the reexamination of the results.

Using this approach, my results indicate that the board of directors does have an important impact on both levels and variability of management

compensation, and that impact can best be interpreted by considering both agency theory and managerial power theory.

Chapter II

Review of Relevant Literature

The Principal Agent Model

In this section I discuss Holmstrom's (1979) principal agent model. The model is separately analyzed for three situations. In the first case the agent's actions are perfectly observable, whereas in the second case the agent's actions are unobservable, so that it is necessary to contract on the outcome. The third case incorporates the effects of costless monitoring as a costless signal about the agent's chosen actions. Optimal solutions to the problem differ in all three situations. From the differences in the solutions it is possible to predict how monitoring (assumed to be a costless signal) will impact the compensation of the agent.

In the model, as developed by Holmstrom (1979), the agent chooses an action from an available set of actions. The observed outcome depends on the agent's action as well as the state of nature which obtains at the time the agent's action is chosen. As a result, there is some uncertainty as to what outcome will result from a given action on the part of the agent. The principal's utility is dependent on the outcome. The agent and the principal negotiate a contract (either explicit or implicit) under which the principal makes a payment to the agent. The agent's utility depends on both the payment from the principal and the action chosen by the agent. The principal's problem is to determine the optimal form of the contract, i.e. the optimal payment schedule to the agent which results in utility maximization for the principal.

The following assumptions are made in the model:

1) Both the principal and the agent are Von Neumann-Morgenstern expected Utility maximizers.

2) The principal's utility depends on the observed outcome net of a payment to the agent and the principal may be either risk averse or risk neutral.

3) The agent's utility depends on the payment from the principal as well as the action chosen by the agent. The agent may be either risk neutral or risk averse with respect to the utility of the payment from the principal, however the agent has a strict disutility for action (effort).

4) Both the principal and the agent have identical probability beliefs concerning the state of the world.

The source of the conflict between the principal and the agent arises because the principal only cares about the outcome and he is indifferent to the agent's chosen action. The agent acts in his own best interests and is action averse (i.e. prefers to shirk). Therefore absent incentives, the agent will shirk. This decreases the probability of achieving the first best solution outcome and this is called the problem of moral hazard. The principal must choose a contract which specifies a payment schedule to the agent. The payment schedule depends on: the outcome, the state of the world and the action chosen by the agent.

Situation I

In the case where the principal and the agent both know what the agent's chosen action is and can make payments conditional on the state of nature, the principal's problem is to maximize his own utility subject to the constraint that the agent achieves, as a minimum, his reservation level of utility. The optimal

payment schedule will depend on the relative degrees of risk aversion of the principal and the agent If the agent is risk averse and the principal is risk neutral, all risk will be borne by the principal and the agent will receive a flat fee for his services. If the agent is risk neutral and the principal is risk averse the agent would bear all of the risk, i.e. all of the variation in income, while the principal would receive a flat fee. Essentially all fluctuation in income will be borne by the risk neutral party. In other intermediate cases where both parties are risk averse but to different degrees, the optimal outcome will involve a sharing of risk. When the principal can observe the actions of the agent, the marginal utilities of the principal and the agent depend only on the relative degrees of risk aversion of the principal and the agent. Thus a first best optimum risk sharing contract is possible and the incentive problem is solved by what is known as a forcing contract. This is because the principal can costlessly observe the agent's action and can withhold payment if the agent does not choose the optimal action.

When the principal is the shareholder and the agent is the manager, it is likely that the assumption that the principal is risk neutral and the agent is risk averse is appropriate. Shareholders can diversify away risk by holding shares in many as opposed to one firm, therefore only a small percentage of shareholder wealth need be invested in any one firm at any time. However, a large portion of the manager's wealth may be associated with his position as the manager of the firm. As a result, the manager is not able to effectively diversify his risk with respect to the firm. When the agency relationship is between the shareholders and the manager of a firm and the shareholders are able to observe the manager's choice of action or at least infer the manager's choice of action from the observed outcome, the optimal solution would be to pay the manager a flat

fee for his services. The shareholders would receive the difference between the outcome and the flat fee paid to the manager. In this situation (all else equal), one would expect to observe lower levels of management compensation and lower variability of management compensation.

Situation II

In the situation where the principal is able only to observe the outcome and has no information about the action chosen by the agent or the state of the world, an incentive compatibility constraint must be added to the model. This incentive compatibility constraint pertains to the agent's utility and essentially ensures that the agent's expected gain from more effort equals the agent's expected disutility from providing that effort. Holmstrom (1979) takes the approach of eliminating the state of the world from the model by using the outcome as a random variable with respect to which expected values are taken. This means that given some action on the part of the agent, there is an outcome for each state of the world which has some probability of occurring. Holmstrom further simplifies the problem by imposing separability between income and action. In this formulation, additional gain from effort on the part of the agent must equal the marginal disutility of effort for the agent.

The optimal solution to this problem depends on the relative degrees of risk aversion of the principal and the agent and the effect of the agent's disutility for effort. If the agent cannot affect the outcome through his choice of action, the first best solution of optimal risk sharing obtains. As long as the agent is able to affect the outcome through his choice of action, and the principal is unable to observe or infer the actions of the agent from the outcome, the optimal solution

will involve a trade-off between optimal risk sharing and a provision of an incentive to the agent to provide effort. This trade-off will result in the risk averse agent bearing a greater proportion of the risk, i.e. residual uncertainty about the outcome, than he would have borne had the first best solution been attainable. The incentive effect results in deviation from optimal risk sharing by increasing the agent's payment in states where increased action increases the probability of a higher outcome and by decreasing the agent's payment in states where increased action increases the probability of a low outcome. This means that the risk neutral principal would not make a fixed payment to the agent. Unlike the situation where the agent's actions were observable, the agent will have to assume some of the residual risk associated with the outcome. His payment will be higher when higher values of the outcome are observed and lower when lower values of the outcome are observed. This second best solution is strictly worse for the principal.

These results can be related to the relationship between the manager and the shareholders of a firm. The results suggest that if the principal agent model is descriptive of managerial compensation contracts, both levels and variability of managerial pay will depend on the extent to which the shareholders can observe, or infer from the outcome, the actions taken by the manager. When it is not possible to determine managerial actions, one would expect to observe higher levels of management compensation and higher variability of management compensation. One would expect to observe higher levels of compensation because the optimal contract results in the manager bearing some of the risk associated with the residual uncertainty of the outcome. In order to induce the manager to enter into the contract, expected compensation must be higher than in the case where the manager does not have to bear any

risk with respect to the outcome. The increase in expected compensation compensates the risk averse manager for risk bearing with respect to the outcome. Variability of management compensation will increase relative to the situation where it is possible to observe the manager's actions because the manager will no longer be paid a flat fee. His compensation will now depend on the outcome.

Situation III

Holmstrom (1979), also addresses the question of contract optimality when a costless signal provides imperfect information about the agent's chosen action. It is assumed that the information provided by the costless signal depends on both the action taken by the agent and the state of the world. In this case the optimal solution depends on the imperfect information as well as the outcome rather than just the outcome as in the previous situation. Essentially, the signal provides a more discriminating way of giving the agent an incentive to choose more effort. It reduces the cost to the principal of providing the right kind of incentive to the agent.

The effect of imperfect information on the optimal contract can be thought of in the following way. If the contract depends on the outcome alone, there is some probability that a high outcome will be observed, and a high payment made to the agent, despite the fact that the agent has provided low effort. Similarly, there is some probability that a low outcome will be observed, and a low payment made to the agent when the agent provides high effort. If some signal is now observable, the value of which increases with effort and with the state of the world, it becomes less likely that high values of both the outcome and the signal

will be observed when the agent's effort is low and less likely that low values of both the outcome and the signal will be observed when the agent's effort is high. Therefore, including the signal in the contract reduces the probability of wrongly compensating low effort and wrongly punishing high effort. This means that when a costless signal is incorporated into the contract, the agent's compensation will not vary as highly as it would in the case where no signal was used in the contracting process. In this situation, compared to the result in situation II, risk sharing between the principal and the agent is enhanced and the principal is better off than in the case where the costless signal is not available, thus the expected level of the agent's compensation will be lower.

Monitoring of the agent's actions is an example of such a signal. The incorporation of monitoring in the compensation contract reduces the risk to the agent. Note that this does not change the fact that the agent gets the same reservation utility both when monitoring is incorporated into the contract and when it is not. This is because the constraint pertaining to the agent's reservation utility holds with equality in both cases. If the principal agent model is descriptive of management compensation contracts negotiated by the shareholders and manager of a firm, and monitoring by the board of directors can provide imperfect information with respect to the agent's chosen action, the results for situation III suggest that when it is possible for the board to perform a monitoring function one should observe both lower levels of management compensation and lower variability of management compensation, relative to the situation where monitoring is not possible.

Pay for Performance

Jensen and Meckling (1976) argue that a conflict of interest arises between the manager of the firm and the shareholders of a firm when there is separation of ownership and control of the firm. Holmstrom's (1979) principal agent model predicts that this conflict can be minimized by aligning the interests of shareholders and management. One method of achieving this alignment is to design a compensation contract for the manager which links his pay to firm performance, thus giving the manager an incentive to maximize firm value. Research examining the association between managerial pay and firm performance has consistently found a statistically significant and positive association between management compensation and firm performance[1]. Finkelstein and Hambrick (1989) and Lambert, Larcker and Weiglet (1993) find a significant and positive association between levels of compensation and firm performance. Jensen and Murphy (1990), Murphy (1985), Coughlan and Schmidt (1985) and Sloan (1993) find a positive association between changes in firm performance and changes in management pay. In the studies by Jensen and Murphy and Coughlan and Schmidt the association was statistically significant but considered economically insignificant. Jensen and Murphy conclude, on the basis of their analysis, that the observed pay-performance sensitivity is inconsistent with the implications of the formal principal agent model. Jensen and Murphy suggest that monitoring by the board of directors may explain the low economic significance of their observed pay/performance sensitivities.

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[1]. For a comprehensive review of this research, see Pavlik, Scott and Tiessen (1993).

Boards of Directors and Monitoring

Corporate boards are a corporate governance mechanism in addition to such other governance mechanisms as corporate law, the market for managers, capital markets and the internal structure of the firm. Corporate boards have the right to approve and monitor major policy decisions and to hire, fire and set the compensation of top management. The effectiveness of corporate boards has been the subject of much debate in the academic literature.

One view is that external directors are an important, if imperfect mechanism for monitoring managerial actions, (Fama, 1980; Fama and Jensen, 1983; Weisbach, 1988). Baysinger and Butler (1985) propose that a complex relationship exists between board composition and board performance. The optimal composition of the board will differ to the extent that firms are differentially affected by other corporate control mechanisms. In addition to external directors, representation by top management on the board is necessary for dissemination of information to external directors regarding current corporate performance and proposed future decisions. Members of the board who are lawyers, consultants or suppliers or customers of the firm, may act to provide information to the board as well as to facilitate transactions between corporations and providing linkages between independent corporations. If external board members are viewed as monitors of managerial action, the presence of external board members should be influenced by the magnitude of agency problems faced by the firm.

Jensen and Meckling, (1976) and Jensen and Murphy, (1990), relate the magnitude of the agency problem to the level of top management's equity

interest in the firm. If top management has a higher equity interest in the firm, agency problems are reduced, because top management's interest are aligned with those of shareholders. This should reduce the need for monitoring by external directors, thus reducing the proportion of external directors on the board.

In a study of board structure for firms making initial public offerings, Beatty and Zajac (1994) find that, the smaller the equity holdings of top management, the larger the percentage of outside directors. This supports the view that corporate boards differ to the extent that board composition is impacted by the availability of other corporate control mechanisms. An alternative explanation for this finding is that managerial power is derived from firm equity ownership and managers with high equity ownership use this power to exclude outsiders from the board.

Empirical examination of the role of corporate boards has produced conflicting results. The results of some studies are essentially neutral with respect to the effectiveness of the board of directors. Morck, Shleiffer and Vishney (1989), find that corporate boards are not the main force behind removing unresponsive managers in poorly performing industries. Kesner, Victor and Lamont (1986), find that the proportion of external directors on the board is not related to the commission of illegal acts by the firm. Chaganti, Mahajan and Sharma (1985) find that in the retail industry firms with larger board size are less likely to be failing firms. However, they find that percentage of external directors is unrelated to failure or success.

Studies which have concluded that corporate boards are ineffective appear to have focused mainly on the adoption of golden parachutes. These studies take the view that adoption of a golden parachute indicates a weaker board. Wade, O'Reilly and Chandarat (1990), find that when a higher proportion of external board members have been appointed by the CEO, the manager is more likely to receive a golden parachute. Cochran, Wood and Jones, (1985) find that greater proportions of insiders on the board is positively associated with the likelihood that the manager will receive a golden parachute. Lambert, Larcker and Weiglet (1993) investigate compensation for positions throughout the firm and find that compensation levels are increasing in proportion of external board members.

Other studies have provided some evidence that external board members are effective monitors of management. Mallette and Fowler (1992), find that certain board attributes reduce the probability that the firm will adopt a poison pill provision. Brickley, Coles and Terry's (1993), results suggest that the stock market reacts positively to a poison pill adoption when the board is composed of a higher proportion of external directors. Kosnik (1990) and (1987) finds that board characteristics reduce the likelihood that a firm will pay greenmail. Baysinger and Butler (1985), find that firms with a higher proportion of external directors in the early 1970's had superior performance records at the end of the decade. Shivdasani's (1993), results indicate that board characteristics are important determinants of the likelihood that a firm will be the target of a hostile takeover attempt. Brickley and James (1987), find that a higher proportion of external directors tends to reduce managerial consumption of perquisites. Weisbach (1988), finds weak evidence that boards dominated by external members are more likely to dismiss managers for poor performance. Rosenstein and Wyatt's (1990) results, suggest that the stock market values a

board which has a higher proportion of external directors. In their study, announcement of an appointment of an additional external director resulted in a positive stock price reaction. Hermalin and Weisbach (1988), find that external directors are likely to be added to boards after a period of poor performance.

The studies noted above have focused on the board of director impact on highly visible corporate decisions. The impact of the board of directors on managerial compensation contracts has not been extensively examined to date, although current research is increasingly focusing in this area. Jensen and Murphy (1990) suggest that monitoring by corporate boards or shareholders may explain the low but significant pay performance sensitivities observed in their research. Tosi and Gomez-Mejia (1989) examine compensation risk for manager controlled firms versus owner controlled firms. Owner controlled firms are defined as firms in which there is a significant external blockholder. Using a questionnaire approach, they find the following: The mean level of monitoring is higher for owner controlled firms; there is significantly more compensation risk in owner controlled firms compared to manager controlled firms; the influence of major stockholders, boards of directors and compensation committees is significantly greater in owner controlled firms and monitoring is related to higher compensation risk in both manager and owner controlled firms, however the impact is significantly higher for owner controlled firms. Finkelstein and Hambrick find no significant relationship between levels of compensation and percentage of firm equity held by external directors. Lambert, Larcker and Weiglet (1993) examine the association between board attributes and pay levels across firms and for positions within the corporate hierarchy. They find a significant positive association between the fraction of external directors on the board and levels of compensation, and a significant negative association

between the existence of external blockholders and the level of compensation. Mehran (1995), finds a significant positive relationship between percentage of external directors and the use of equity based compensation and a significant negative association between the percentage of shares held by external blockholders and the use of equity based compensation.

Managerial Power and Corporate Boards

Hermalin and Weisbach (1995), characterize the relationship between the top manager of the corporation and the board of directors of the corporation as a bargaining game. The outcome of the bargaining process determines both whether the manager will maintain his position with the corporation and the level of compensation he will receive. One of the factors that impacts the bargaining process is the power of the manager relative to the power of the board of directors. Hinings, Hickson, Pennings and Schneck (1974), define power as " the capacity of individual actors to exert their will." With respect to the relationship between the top manager of the corporation and the board of directors, one would assume that the top manager would prefer to maintain his position and to receive higher rather than lower compensation. A manager with greater power relative to another manager should be able to use his power to circumvent monitoring by the board of directors of the corporation. This is consistent with the views of Mintzberg (1983), who suggests that the effectiveness of board monitoring is contingent on the relative power of the board versus the CEO.

In order to investigate the impact of managerial power on management compensation it is necessary to understand the determinants of that power.

Finkelstein (1992), investigates power in top management teams. In his work he develops measures of power consistent with four dimensions of power. The four dimensions of power considered are: Structural power, expert power, ownership power and prestige power. These dimensions of power are related to the ability of the individual manager to cope with internal and external sources of uncertainty in his internal and external environment, where the internal environment can be considered to be within the corporation employing the manager and the external or institutional environment can be considered to consist of all persons or organizations external to the corporation who have an interest in the corporation. Finkelstein claims that powerful managers will exert their power, with respect to their relationship with the board of directors, by restricting or reinterpreting information disseminated to the board. Estes (1980), suggests that while external board members may contribute much to the board in terms of breadth of knowledge, experience and objectivity, it is difficult for external directors to understand the complexities of the company and to monitor management decision making. As a result it is difficult for external board members to be fully responsible and effective. If managers use their power to restrict or alter information flowed through to the board, the possibility of effective monitoring by external board members would be further reduced in situation where the manager has greater power and uses this power to restrict or reinterpret information provided to the board.

A powerful manager may also have the ability to determine the composition of the board of directors. Mace (1986), Herman (1981), and Pfeffer (1972), claim that managers dominate the director selection process. They reason that because board members are dependent on management for their position on the board, board member loyalties lie with management rather than with the

boards which they serve. As a result, corporate boards are incapable of effectively monitoring the actions of management. Lambert, Larcker and Weiglet (1993), hypothesize that managerial power to exert the manager's preferences with respect to pay will be increasing in the number of external board members whose loyalties lie with management. They measure board member loyalty as the percentage of external directors elected after the CEO obtained his position as CEO. Their results indicate a significant positive association between this measure and levels of CEO compensation. Using a similar measure of board member loyalty to management, Wade, O'Reilly and Chandarat (1990), find a significant and positive association between the percentage of external directors appointed by the CEO and the granting of a Golden Parachute to the CEO. These results are consistent with the view that managerial power has an impact on board decision making.

The manager's power to exert his preferences to obtain higher compensation should be constrained by the power of the board of directors. Pfeffer (1981) argues that external board members are less loyal to management than internal board members. This suggests that board power vis-a-vis management power should be consistent with a higher proportion of external directors. Lambert, Larcker and Weiglet (1993), hypothesize that corporate boards with a higher proportion of external directors will constrain management power resulting in lower levels of management compensation. Contrary to this hypothesis, they find that a higher proportion of external directors is associated with higher levels of management pay. The literature also suggests that ownership of firm shares by external board members will enhance the power of the board relative to the power of the manager, (Finkelstein and Hambrick, 1989 and Lambert, Larcker and Weiglet, 1993). However, both of these studies find an insignificant

association between external board member ownership of firm shares and levels of management compensation.

Overall, empirical research examining the effectiveness of corporate boards has produced inconclusive results. Board responsibilities, such as monitoring the actions of management or ensuring alignment of the interests of the shareholders and management, may be a function of the extent to which the board is more powerful than management. In addition the focus in previous research on levels of compensation instead of the risk/level tradeoff makes it difficult to interpret previous findings. Thus, a consideration of both managerial power theory and agency theory and the level/risk tradeoff is necessary in an investigation of the impact of the board on the compensation contract of the manager.

Chapter III

Model Development

When there is a separation between ownership and control of a firm, managers who control the firm may act in their own self interests to maximize their wealth rather than the wealth of shareholders. Agency theory predicts that the shareholders of the firm will overcome this problem by linking the pay of the manager to the performance of the firm to induce the manager to act in the interests of the shareholders. This solution imposes risk on the manager and results in higher expected levels and variability of compensation. The majority of research investigating management compensation has focused on the link between management pay and firm performance. Recently, increased attention has been focused on the impact of the board of directors on the management compensation contract.

The board of directors are the elected representatives of shareholders. There has been ongoing debate in the academic literature with respect to the effectiveness of the board of directors in there role as the representatives of shareholders. Some researchers hold the view that corporate boards are controlled by management, thus are ineffective in protecting shareholder interests. Other researchers hold the view that corporate boards are effective in this regard. In this research, I investigate the impact of the board of directors on the management compensation contract.

Corporate boards, in their role as the representatives of management, are directly responsible for negotiating management compensation contracts and

for implementing the terms of those contracts. From the perspective of agency theory corporate boards can be considered potential monitors of management actions. The predictions of agency theory imply that when costless monitoring is possible, risk sharing between the owners of the firm and the manager of the firm will be enhanced. Specifically, monitoring should result in a reduction in the risk imposed on management necessary to induce the manager to act in the best interest of the shareholders. If boards do monitor managerial action, one would expect to observe lower levels of management compensation and lower variability of management compensation in the presence of an effective board.

A potential drawback to agency theory is that it assumes no power on the part of the manager to circumvent risk sharing. If the manager has power, as some board activists suggest, more powerful managers may be able to exert their preferences for higher compensation in the absence of risk sharing. Thus an investigation of the impact of the board of directors on the management compensation contract must consider the monitoring role of the board of directors as well as the manager's power to defeat the monitoring role of the board of directors.

In this chapter, I consider two distinct models of managerial compensation, an agency theory model and a managerial power model.

Hypothesis Development

Agency Model

The composition of the board of directors should have implications for the likelihood that the board of directors are effective monitors of managerial actions. In order to effectively monitor the actions of management one must first hold a position on the board of directors of the firm. Merely holding a position on the board of directors of the firm does not, however, guarantee that the individual board member will be an effective monitor of management performance. The individual board member must have both the ability and incentive to monitor the actions of management. In the development of testable hypothesis with respect to the monitoring role of the board of directors, I consider board structure as well as attributes of various board members. Board attributes considered in this research are: Proportion of external board members on the board and on the management compensation committee of the board of directors; other directorships held by external board members, experience of external board members as top managers of other corporations; tenure of external board members; the existence of external blockholders and ownership of firm shares by external board members, the manager and family of the manager who are also board members.

Many of the studies noted in chapter II have focused on the role of external directors as monitors of managerial behavior. External directors are viewed as more independent of the top manager than internal directors, thus better able to represent the interests of the shareholders of the firm. Consistent with this view, Rosenstein and Wyatt (1990), find that the stock market reacts positively to the

appointment of an external director to the board. Weisbach (1988) finds weak evidence that firms with a higher proportion of external directors are more likely to replace a CEO when firm performance is poor and Baysinger and Butler (1985), found that firms with a higher percentage of independent directors, in 1970, had better firm performance in 1980. Kosnik (1990), found that boards with a higher proportion of external directors were associated with an increase in the probability of resistance to greenmail. All of these results suggest that boards with a higher proportion of external board members are more effective in representing the interests of the shareholders than boards with a lower proportion of external directors.

With respect to managerial compensation, the interests of shareholders may be best served through external director monitoring of management's actions. According to Holmstrom (1979), when costless monitoring is possible, the optimal compensation contract will be more efficient in terms of risk sharing than when monitoring is not possible. As a result, the manager will not have to bear as much risk for the outcome as would otherwise have been the case. When lower risk is imposed on the manager, the variability of his compensation will be decreased and as a result the expected level of his compensation will be lower.

Inside directors, whose careers are tied to that of the manager, are not in a position to effectively monitor the top manager's actions because they are not independent of management. External directors who are independent of top management are more likely to perform this function, thus boards with a higher proportion of external directors should be associated with increased monitoring of managerial actions. If external directors are effective monitors of managerial action, managers of firms whose boards are weighted more heavily toward

external director representation, should have lower risk imposed on them through their management compensation contracts. This should result in lower variability of management compensation and lower levels of management compensation.

Hypothesis PA1: Boards with a higher proportion of external directors will be associated with decreased levels and variability of management compensation.

The previous hypothesis addressed the monitoring role of the board of directors from the perspective that external directors who are independent of management are more likely to monitor the actions of management. However, simply being in the position to monitor the actions of management does not necessarily make an external director an effective monitor of managerial actions. Individual attributes of external board members are an important determinant of both their incentive and ability to be effective monitors. One such attribute may be membership on the board of directors of other corporations. External directors may be subject to discipline from the market for their services much like managers are subject to discipline from the managerial labor market, (Fama, 1980).

The market for outside directorships may provide directors with an incentive to be effective monitors. This incentive arises because being the director of a value maximizing firm signals the value of the director to the market for external director services. This may lead to the award of additional directorships of other corporations. In addition, directors who are members of other boards are likely to have a wider range of experience to draw on in evaluating management's current performance and proposed actions. Consistent with this reasoning,

Shivdasani (1993) finds that higher numbers of other directorships held by outside directors significantly reduces the probability that the firm will be the target of a hostile takeover attempt. Similarly, Gilson (1990), documents a significant decline in additional directorships held by outside directors who depart from financially distressed firms. If external directors value the opportunity to be members of multiple corporate boards, and this increases both their incentive and ability to effectively monitor the actions of management, one would expect to observe both lower levels and variability of management compensation when external board members hold more positions as directors of other firms.

Hypothesis PA2: The number of other directorships on other corporate boards, held by external board members, will be negatively associated with both levels and variability of management compensation.

Board activists, for example (Estes, 1980), argue that external board members may use breadth of knowledge, experience and objectivity to influence board decisions. However, they are limited in their ability to do so because it is difficult for them to understand the complexities of the firm, thus it is difficult for them to monitor its operations and by extension evaluate the impact of managerial performance. Effective monitoring is not possible without the requisite ability to evaluate potential and actual managerial actions. A review of proxy statements reveals diversity in the background of non-management directors. Board members come from such diverse occupations as: managers of other corporations, lawyers, bankers, consultants, accountants, professional directors, politicians, sports and educators. Proxy statements also reveal that corporate boards differ across firms with respect to representation by members of the

various occupations. For example, some boards have high proportions of politicians and educators while other boards have high proportions of managers and retired managers. Of these groups, it is likely that external directors who are managers and retired managers of other corporations have a better understanding of the complexities of the firm, thus a better idea of the range of possible managerial actions that can be taken in a given situation. External directors from other occupations may lack the hands on experience of managers and retired managers, making it more difficult to assess the possible repercussions of management's actions.

If external directors who are managers or retired managers of other firms are better able to evaluate management performance, they will be more effective as monitors. Brickley, Coles and Terry (1993) find that the average stock price reaction to poison pill adoptions is significantly positive when the board is controlled by outsiders. More detailed analysis indicates that their results are largely driven by outside directors who are retired executives of other companies. These results indicate that the Stock Market values the expertise of external directors who are retired managers. Kaplan and Reishus (1990), find that top managers of dividend cutting firms are significantly less likely to obtain directorships on other corporate boards following the dividend cut. They argue that their results indicate that executives who are perceived as better managers tend to become outside directors of other firms. If managers and retired managers of other firms have a greater ability to monitor managerial actions one would expect to observe lower levels and variability of compensation for managers of firms in which a higher proportion of external directors are managers or retired managers of other firms.

Hypothesis PA3: Higher proportions of external directors who are managers or retired managers of other firms will be associated with lower levels and variability of management compensation.

Ability to monitor may also be dependent on the experience level of external directors. Newly appointed directors may lack firm specific knowledge which makes it difficult for them to evaluate managerial actions. Bacon and Brown (1975), claim that effective performance of external directors requires three to five years of board experience. Hermalin and Weisbach (1991), find that firms whose external board members have longer median tenures, tend to have higher performance as measured by Tobin's Q. They argue that this result is consistent with the acquisition of firm-specific knowledge over time by outside directors. Kosnik (1987), finds that increased tenures of external directors significantly increases the probability that a firm will resist payment of Greenmail. If increased tenure results in enhanced ability to evaluate and thus monitor managerial action, one would expect to observe lower levels and variability of management compensation for managers of firms which have external directors with longer tenures.

Hypothesis PA4: Longer tenures of external board members will be associated with lower levels and lower variability of managerial compensation.

The existence of significant external blockholders may have an impact on the management compensation contract through the ability of these external blockholders to monitor the actions of management. Hill and Snell (1989), argue that stock ownership concentration is important, because if information asymmetries exist between managers and shareholders, shareholders may

lack the information necessary to determine if management is acting in their best interests. Existing information asymmetries may allow manager's to pursue personal objectives that are not in the best interests of shareholders. If stock ownership is concentrated, it is easier for shareholders to coordinate their actions and demand information from managers with which to assess managerial performance, (Mallette and Fowler, 1989).

Shivdasani (1993), finds that ownership by blockholders, with no significant ties to management, significantly raises the likelihood of a hostile takeover attempt. Mehran (1995), hypothesizes that external blockholders may be substitutes for the monitoring activities of the board of directors. Consistent with this hypothesis, Mehran finds a significant negative association between the existence of external blockholders and stock based compensation as a percentage of total compensation. Lambert, Larcker and Weiglet (1993), find a significant negative association between the existence of 5% blockholders and levels of management compensation. Both of these results suggest that external blockholders act as monitors of management actions resulting in a decrease in both the riskiness and consequently the level of management compensation.

Hypothesis PA5: The existence of a significant external blockholder will be associated with decreased levels and variability of management compensation.

Ownership of firms shares by members of the board of directors should also have implications for the management compensation contract. In this research, I consider firm share ownership by external directors, managers and members of manager's families who sit on the board of directors.

Agency theory suggests that conflicts of interest can be reduced by aligning the interests of shareholders and their representatives. Firm share ownership by external directors is one such method of interest alignment. External directors who have high equity stakes in the firm should have an increased incentive to monitor the actions of management relative to external board members who have low or insignificant equity interests in the firm. Poor management decisions have more of an impact on director wealth for higher levels of director equity holdings.

Shivdasani (1993), finds that, although the proportion of unaffiliated directors does not significantly affect the probability that a firm will be a hostile takeover target, higher equity holdings of unaffiliated external directors has a significant negative impact on the probability. Lambert, Larcker and Weiglet (1993) and Finkelstein and Hambrick (1989), both hypothesize that higher equity ownership by external directors will lead to an increased incentive for those directors to monitor the actions of management, and this should result in lower levels of management compensation. Finkelstein and Hambrick (1989) find no significant association between external board member shareholdings and levels of management compensation. For Lambert, Larcker and Weiglet's (1993) pooled sample no significant association is found between external director equity holdings and levels of management compensation. However when the regressions are run for individual industries, the relationship is significantly negative for some industry classifications. Both the Finkelstein and Hambrick study and the Lambert, Larcker and Weiglet study investigate the impact of external director shareholdings on levels of compensation. If external director shareholdings increase the incentive of external directors to monitor the actions of management, one would expect to observe both lower levels and

lower variability of management compensation when external directors hold higher equity stakes in the firm.

Hypothesis PA6: Higher equity holdings by external board members will be negatively associated with levels and variability of management compensation.

According to agency theory, the optimal compensation contract depends in part on the extent to which management and shareholder interests are divergent. Shareholders prefer managers to pursue strategies that maximize shareholder return, while managers are assumed to be interested in strategies that maximize their private returns. One way to align the interest of managers and shareholders is through managerial ownership of firm shares. To the extent that a large proportion of management's wealth is represented by his ownership in the firm, maximization of managerial wealth is consistent with maximization of shareholder wealth. It should not, therefore, be as necessary to impose risk on the manager by linking his compensation[1] to firm performance when the manager owns a higher proportion of firm equity relative to the situation where the manager has a low or negligible stake in firm equity.

Existing empirical evidence suggests that management ownership of firm shares results in interest alignment between managers and shareholders. Lewellen, Loderer and Rosenfeld (1985), found that the percentage of company stock held by managers of bidder firms was positively related to abnormal stock returns of bidder firms in the period between the announcement of a merger bid and the stockholder approval date. Kosnik (1990), found that companies were

[1] Compensation as defined in this research excludes any increases in the manager's wealth arising as a result of the manager's ownership of firm shares.

more likely to resist greenmail the higher the top manager's equity interest is relative to his income from salary and bonus. Shivdasani (1993), found that higher firm equity interest held by the CEO of the firm, significantly decreased the likelihood that the firm would be the target of a hostile takeover attempt.

If managerial ownership of firm shares results in alignment of the interests of the manager and shareholders, one would expect to observe that managers who hold high stakes in the firm have less emphasis placed on incentive compensation in their compensation contract. Sloan (1993) finds a significant negative relationship between the interaction of change in return on assets and the ratio of management firm ownership and the change in annual compensation. This indicates that for a given change in accounting earnings, management compensation changes less when managerial ownership of firm shares is high. Mehran (1995), finds a significant negative association between managerial shareholdings and equity based compensation as a percentage of total compensation. Both of these results suggest that higher managerial ownership of firm shares results in less emphasis on incentive compensation in the manager's compensation contract, thus less risky compensation packages.

Agency theory predicts that compensation levels will be lower in situations where lower compensation risk is imposed on the manager. If managerial ownership of firm shares results in lower risk in the compensation contract, one would expect to observe lower levels of management compensation when the manager has a higher equity stake in the firm. Consistent with this hypothesis, Lambert, Larcker and Weiglet (1993) find a significant negative relationship between levels of pay and managerial shareholdings. In contrast with this result, Finkelstein and Hambrick (1989), find a significant positive relationship

between managerial shareholdings and level of CEO compensation, when compensation is defined as salary only. No significant relationship is found between managerial ownership of firm shares and levels of compensation when compensation is defined as salary and bonus. Thus existing evidence indicates mixed results for the impact of managerial ownership of firm shares on the level of management compensation.

Hypothesis PA7: Managerial ownership of firm shares will be associated with lower levels and variability of management compensation.

Poor managerial performance, which results in poor firm performance, will negatively impact the personal wealth of family members of the manager who have equity stakes in the firm. Thus, family members who have equity stakes in the firm have an incentive to monitor the performance of the manager. To the extent that family members with equity stakes in the firm are also members of the board of directors, these family members are also in a position to influence the compensation of the manager. The predictions of the principal agent model imply that when monitoring is possible, the optimal contract will impose less risk on the manager. Lower risk is associated with lower expected compensation. Thus, increased vigilance of family shareholders who sit on the board of directors should result in lower levels and variability of compensation for the manager.

Hypothesis PA8: Ownership of firm shares by the family members, who sit on the board of directors, will be associated with lower levels and variability of management compensation.

Control Variables

In addition to board of director attributes, it is necessary to control for measures which have been found to impact compensation in previous research. Control variables considered in this research are: Firm size, firm complexity, firm performance, firm risk and aspects of human capital.

Previous research on managerial compensation has found a significant positive relationship between firm size and levels of compensation. Garen (1994), Finkelstein and Hambrick (1989), Gaver and Gaver (1995) and Murphy (1985) and Lambert, Larcker and Weiglet (1993), all find a significant positive association between firm size and levels of management compensation. One explanation for this relationship is that larger corporations are more complex, requiring managers with higher skills, (Rosen, 1982). More highly skilled managers will demand a higher labor market opportunity wage resulting in higher pay for managers of larger firms. Pavlik, Scott and Tiessen (1993), note that larger more complex firms are likely to have more hierarchical levels. Leonard (1990) and Abowd (1990), find that increasingly large pay differentials are utilized between hierarchical levels in a firm. When firm complexity is high monitoring is more costly. In these situations the optimal contract may result in increased risk imposed on the manager through his compensation contract. Thus, one would expect to observe both higher levels and higher variability of management compensation for managers of larger firms.

Firm size is one possible measure of complexity although for a given firm size some firms may be engaged in more diverse operations than other firms. Managers of these firms may command a premium in the managerial labor

market, both because of the demands of their jobs and because their talents are relatively scarce (Agrawal, 1981). As a result of this complexity, one would expect to observe higher levels of management compensation when a firm has more diverse operations[2]. To the extent that the lower cost alternative in a complex situation is to tighten the link between management pay and firm performance rather than monitoring the actions of management, one would expect to observe increased variability of management compensation. Thus managers of more diversified firms should have higher levels and higher variability of management compensation.

The predictions of the principal agent model imply that when the optimal compensation contract includes a strong link between managerial compensation and firm performance, managerial compensation (all else equal) will be higher than in situations where a weaker association between firm pay and performance is required. When agency problems necessitate a strong link between pay and performance, the manager must bear higher risk associated with the outcome, i.e. firm performance, and thus he will negotiate a compensation contract which includes higher expected pay to compensate for the assumption of additional risk. Garen (1994), finds a significant positive association between Jensen and Murphy's (1990) measure of pay performance sensitivity for salary and short term bonus and levels of salary and short term bonus. This indicates that when compensation is tied more tightly to

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[2] Finkelstein and Hambrick (1989), however, find no significant association between firm diversity and levels of management compensation. Their measure of corporate diversity was the number of four digit SIC codes for the company. The number of four digit SIC codes may fail to appropriately capture corporate diversity. One company may have a high number of four digit SIC codes but essentially be operating in one industry. An example for the pulp and paper industry is as follows: Packaging paper falls under SIC code 2671 while laminated paper falls under SIC code 2672. Another company may be operating in two significantly different industries and be assigned only two four digit SIC codes. Thus, a broader measure of corporate diversity such as the number of two digit SIC codes for the company may better capture firm complexity.

performance, compensation is higher. Previous research by Jensen and Murphy (1990), Murphy (1985), Coughlan and Schmidt (1985), Lambert and Larcker (1987) and Sloan (1993) find a significant positive relationship between changes in management pay and firm performance. Lambert, Larcker and Weiglet (1993), Finkelstein and Hambrick (1993) and Gaver and Gaver (1995), find a significant positive association between levels of compensation and firm performance. Thus both levels and variability of management compensation should be higher when firm performance is better.

In the agency theory setting, the manager, who is assumed to be risk averse, prefers higher absolute compensation to compensation contingent on performance. The optimal compensation contract is established through a trade-off between ensuring that the manager receives an acceptable reservation wage and the provision of incentives. Fama (1980) notes that a substantial fraction of a manager's wealth is invested in firm specific human capital, making the manager's position non-diversifiable. Thus, manager's may damage their reputation and earning power ability if the firm goes bankrupt. In riskier situations, rational managers will demand higher pay to compensate them for the cost of this non-diversifiable risk. Hill and Phan (1991), discuss firm risk in similar terms. "The riskier a firm's business, the greater is the probability that negative outcomes will result in the CEO being terminated. Since CEO's who have been terminated are unlikely to get similar jobs, termination has serious consequences for their future earnings potential. CEO's might seek assurance against this lack of job security by demanding higher pay in riskier enterprises." (pg. 709).

Research investigating the association between firm risk and managerial compensation has produced mixed results. Hill and Phan (1991), find a positive but insignificant association between firm risk, defined as the firm's five year stock market beta and level of compensation defined as salary and short term bonus. Garen (1995) finds a significant positive relationship between the firms stock market beta and level of compensation defined as salary and bonus. Mehran (1992) found that firm risk (measured as the ratio of long term debt to book value of total assets) was positively associated with incentive compensation as a percentage of total compensation. However, the relationship was not significant. These results indicate that firm risk may have an impact on the level of management compensation. In a principal agent setting, the expected level of compensation will be higher when the compensation contract is riskier, whether that risk is imposed by the board of directors or is a firm characteristic. Thus firm risk is expected to have a positive impact on both the level and variability of management compensation.

Research in the area of labour economics on executive compensation has been primarily directed at compensation for executives within the corporate hierarchy. Leornard (1990) is an example of this work. Human capital measures considered by Leonard are as follows: Age, tenure with the firm, job tenure, years of schooling, division responsibility, plant responsibility, board member, eligibility for incentive compensation, number of subordinate levels and number of superior levels. Many of these measures are not relevant for my research because the focus of the research is on top manager compensation across firms. All of the top manager's of the corporations examined in this research were members of the board of directors. All manager's were eligible for incentive compensation if the firm had an incentive compensation plan. All

manager's were responsible for all divisions in the corporation, thus division responsibility and plant responsibility are not appropriate measures for this research. A measure of the number of superior levels is clearly inappropriate as the top manager of the firm has no superior levels with the exception of the board of directors. Firm size which has been discussed above can be considered a proxy for the number of subordinate levels. Job tenure is considered in the managerial power model as set out below. Top managers are also unlikely to exhibit significant variation with respect to years of schooling. They may, however exhibit variation in terms of Colleges or Universities attended. A measure of "elite" education is considered in the managerial power model below. Another possible measure of the manager's human capital is firm performance. This has been included above as a control variable. Thus, the human capital measures included in the principal agent model are the manager's tenure with the firm and the age of the manager.

Research investigating the relationship between CEO pay and the CEO's tenure with the firm has been limited. Much of the research on company tenure has focused on the hierarchical structure of the firm and the impact of job tenure within the firm. Leonard (1990), claims that those who settle with one company earlier in their career are more likely to remain at lower levels of the hierarchy. He finds that managers at lower levels of the hierarchy are not older than managers at higher levels of the hierarchy even though they have two to three more years of company tenure. Leonard interprets this as the value of "job shopping", i.e., those executives who did move around were able to ascend to higher levels of the corporate hierarchy than those who did not. It is also possible that those who did not move around before settling into a particular firm, attempted to find other employment, but because of lack of ability were

unable to do so. This reasoning would indicate that managers who are hired from outside the firm, rather than promoted from within the firm, have greater ability and because of competition in the managerial labor market will be more highly compensated. Another view of the impact of company tenure on management compensation is that managers who remain with the same firm for a number of years may be more loyal to the firm. Loyalty to the firm may result in reduced agency problems thus decreasing the need for reliance on incentive compensation in the management compensation contract. Consistent with Murphy's (1986) learning hypothesis, directors of the firm should be better able to assess management performance for a manager promoted from within the firm compared to a manager hired from outside the firm. Most candidates for the top executive position participate in board meetings prior to their appointment as top executive officer, thus the board is often able to gain knowledge of the incumbent manager's ability prior to his appointment as top manager. This reasoning is consistent with the expectation that managers who have been with the firm for a longer period of time will have lower levels of compensation and decreased variability of compensation.

The age of the manager should be positively associated with both levels and variability of compensation for two reasons. Firstly, older managers have greater experience, making them more valuable in terms of ability. Competition in the managerial labor market should result in higher pay for higher levels of ability. Secondly, it may be necessary to provide a greater proportion of incentives in the pay mix of older managers. Older managers may be less sensitive to discipline from the managerial labor market, resulting in increased severity of agency problems (Lewellen, Loderer and Martin, 1987). Similarly, Gibbons and Murphy (1992) suggest that age will result in greater use of

incentive pay because older managers have shorter time horizons resulting in greater agency problems. Expected compensation and provision of incentives in the compensation package should be positively related. Abowd (1990), states, "The expected cost of a compensation system must increase as it becomes more performance based - expected payroll costs and the degree of pay performance sensitivity in the compensation plan are positively correlated." (pg. 53S). If it is necessary to provide greater incentives to older managers to reduce agency problems, one would expect that older managers would receive higher compensation. Leonard (1990) and Abowd (1990), both find that age is significantly positively associated with compensation when compensation is defined as salary and bonus. Their research does not distinguish between ability and increased agency problems as explanations for higher observed pay. Garen (1994), finds that age is positively associated with increases in pay performance sensitivity indicating that older managers have more incentive pay in their compensation packages due to limited time horizon problems. This is consistent with the view that more incentive based compensation, thus higher level and variability of compensation, is required to reduce agency problems when the firm is headed by an older manager.

Managerial Power Model

Agency theory assumes that the principal or the owners of the firm have all of the power in the negotiation of the management compensation contract. To the extent that the manager has any power in the negotiation process, the form of the compensation contract may be inconsistent with the predictions of agency theory. In this section I develop hypotheses to examine the impact of managerial power on management compensation.

Finkelstein (1992:506), consistent with Hinings, Hickson, Pennings and Schneck (1974) and Pfeffer (1981), defines power "as the capacity of individual actors to exert their will." Lambert, Larcker and Weiglet (1993) relate this definition of power to executive compensation. They assume that managers prefer higher levels of pay to lower levels of pay and they define power as "the ability of managers to influence or exert their will or desires on the remuneration decisions made by the board of directors or perhaps the management compensation committee of the board of directors."

Finkelstein's (1992) work focuses on power in top management teams. Recognizing the multi-dimensional nature of power, Finkelstein sets out four dimensions of power relevant to top management teams. These dimensions of power arise from the ability of managers to deal with uncertainty in their internal and external environment (Finkelstein, 1992). Those individuals who are best able to cope with these sources of uncertainty have greater power, thus are in the best position to exert their will or preferences to obtain higher compensation. The four dimensions of power set out by Finkelstein (1992) are: Structural power; expert power; ownership power and prestige power. He develops measures of power for top management teams. In some cases I have adapted his dimensions of power to describe possible power bases of the top manager of the corporation, rather than of the top management team.

Structural Power

Structural power arises as a result of position in the corporate hierarchy (Pfeffer, 1981 and Finkelstein, 1992). Position in the corporate hierarchy can result in control over information flows (Lambert, Larcker and Weiglet, 1993). This control may be used by top managers to either restrict or reinterpret information passed on to the board of directors. Top managers who effectively restrict the board's access to information or reinterpret information flowing through to the board are in a position to enhance their compensation. This assumes that top managers prefer to restrict information or reinterpret information passed on to the board that does not reflect well on the top manager's ability or performance.

Previous research on management compensation has found a consistently positive and significant relationship between corporate size and compensation. One explanation for this observed effect is that large firms are expected to have more hierarchical levels because large firms are more likely to decentralize making the actions of mid level management less observable (Gaver and Gaver, 1995). The result is that board members in larger firms must place more reliance on top manager's dissemination of information flowing through to the board. Thus, the larger the firm, the greater is the top manager's structural power.

Hypothesis MP1: Firm size will be associated with higher levels of top management compensation.

Another means by which top managers can control information flowing through to the board, thus reducing uncertainty emanating from the board, is to hold the

position of chairman of the board. The Chairman of the board is responsible for setting out the agenda for each board meeting. A top manager who is also the Chairman of the board is in a position to control information disseminated to the board because he is in a position to control board meetings through determination of the agenda. Alternatively, if the top manager is not also the Chairman of the board, his ability to control information flowing through to the board as a result of agenda setting is diminished. Thus a top manager who is also the Chairman of the board has greater structural power than a top manager who is not also the Chairman of the board.

Hypothesis MP2: The position of the top manager as the Chairman of the board of directors will be associated with higher levels of management compensation.

Some researchers view the board as "puppets of management". Mace (1986), Herman (1981) and Pfeffer (1972), claim that managers dominate the director selection process. They reason that because board members are dependent on management for their position on the board, board member loyalties lie with management rather than with the stakeholders which board members serve. External directors who have been selected by top management are likely to be more loyal to the top manager than those who have not. As a result, directors selected by the top manager may be less likely to demand additional information or to question information provided to the board by the top manager. This may enhance the top manager's ability to control information disseminated to the board.

Hypothesis MP3: A higher proportion of external directors appointed to the board of directors after the top manager has been appointed to his position will be associated with higher levels of top management compensation.

Top managers who have held their position for a longer period of time are likely to have appointed more of the existing external board members than top managers with shorter job tenures. Herman (1981), Mace (1971), Pfeffer (1972) and Vance (1983), suggest that over the course of the top manager's tenure there will be an increase in the number of board members who are loyal to the top manager. This is, in part, due to the top manager's influence in the director selection process, but it is also a result of a longer period of time over which the top manager has an opportunity to develop relationships with and obtain the loyalty of external board members who sat on the board at the time that the top manager was appointed to his position. As noted above, increased loyalty of external board members may result in fewer requests for further information and less careful scrutiny of information presented to the board, giving the top manager greater structural power.

Hypothesis MP4: Longer tenures of top managers will be associated with higher levels of top management compensation.

Corporate boards have the power to hire, fire and set the compensation of top management. Hermalin and Weisbach (1995), characterize the setting of management compensation as the outcome of a bargaining process between the top manager and the board of directors. The ability the top manager has to exert his influence to obtain higher compensation is constrained by the power

the board of directors has in the bargaining process. The power of the board arises from board structure.

Pfeffer (1981) argues that internal board members are more loyal to top managers than external board members. As a result top managers can more readily exert power over internal board members than external board members. If external board members are not as loyal to management and this gives the board greater bargaining power in setting top management compensation, one would expect that boards which have a higher proportion of external members would grant lower compensation than boards which have a lower proportion of external directors.

Hypothesis MP5: Boards with a higher proportion of external directors will be associated with lower levels of management compensation.

Members of the compensation committee of the board of directors are directly responsible for setting the compensation of top management, thus are in the position to have greater influence on managerial compensation than other directors. When the compensation committee is not composed entirely of external directors, it is most often the case that the internal member of the compensation committee is the top manager himself. In these situations, proxy statements explicitly state that the top manager does not participate in decisions regarding the setting of his own compensation, supposedly not compromising the independence of the committee with respect to the assessment of top management performance. The presence of the top manager on the compensation committee enables that manager to influence compensation committee decisions regarding compensation of managers directly below

himself in the corporate hierarchy. Abowd (1990) and Lambert, Larcker and Weiglet (1993), both find that pay differences between hierarchical levels increase toward the top of the corporate hierarchy. The presence of the top manager on the compensation committee may enable that manager to influence or exert power over the decisions of the external board members on the compensation committee to increase pay levels for those managers directly below the top manager in the corporate hierarchy. To the extent that pay differences within a firm are an increasing function of hierarchical level, this would result in an increase in the top manager's own pay.

Hypothesis MP6: Compensation committees which are composed of a higher proportion of external directors will be associated with lower levels of management compensation.

Expert Power

Power is derived by managers according to their ability to deal with internal and external sources of uncertainty (Finkelstein, 1992). One important external source of uncertainty is environmental contingencies. The ability of the manager to contribute to organizational success by dealing with environmental contingencies is an important source of power (Hambrick, 1981 and Mintzberg, 1983). Finkelstein and Hambrick (1989), define expertise as the ability to deal with environmental contingencies. Top managers who have high levels of expert power, deriving from their expertise, should earn higher levels of compensation, both because of the demands of their jobs and because, in the managerial labor market, managers with high levels of expertise may be relatively scarce. (Agrawal, 1981).

Complexity of an organization requires a higher level of expertise of the top manager of the organization. Finkelstein and Hambrick (1989) considered corporate diversity as a measure of corporate complexity. They hypothesized that the more diverse a corporation, the greater the level of expertise required by management of the corporation. In their investigation of levels of compensation (defined as salary and bonus) they found a positive but insignificant relationship between corporate diversity and compensation.

Hypothesis MP7: Greater complexity of a corporation will be associated with higher levels of management compensation.

Ownership Power

Finkelstein (1992), views ownership power as the ability to influence board decisions through all of the following: Managerial ownership of firm shares; ownership of firm shares by the family of the top manager and the manager's position as the founder of the firm or as a relative of the founder of the firm. In Finkelstein's (1992) view ownership power arises through the reduction of uncertainty emanating from the board of directors.

Zald (1969), Tosi and Gomez-Mejia (1989) and Finkelstein and Hambrick (1989), claim that top managers who hold greater equity positions in their firm's shares will be more powerful than managers who have a lesser equity stake in the firm. Finkelstein and Hambrick (1989) and Lambert, Larcker and Weiglet (1993) test the proposition that managerial ownership of firm shares enables the manager to obtain higher levels of compensation. Finkelstein and Hambrick

(1989) find that percentage of firm shares held by the CEOs of their firms is significantly positively associated with the level of CEO compensation when compensation is defined as salary only. A positive but insignificant relationship is found when compensation is defined as salary and bonus. Contrary to the hypothesis of managerial power arising from managerial share ownership and resulting in higher managerial compensation, Lambert, Larcker and Weiglet (1993), find a significant negative association between managerial ownership of firm shares and levels of management compensation. Thus existing research has provided ambiguous results for the impact of managerial ownership of firm shares on the level of management compensation.

Hypothesis MP8: Higher levels of managerial ownership of firm shares will be associated with higher levels of management compensation.

The second aspect of ownership power discussed by Finkelstein (1992), is the power derived by the manager in his position either as the founder of the organization or as a relative of the founder of the organization. Finkelstein's view is that these individuals attain power over board decisions through long term interactions with board members. These long term interactions result in implicit control over the board.

Hypothesis MP9: The manager's position as founder or relative of the founder of the firm will be associated with higher levels of management compensation.

Equity stakes of other members of the manager's family may serve to enhance managerial power (Finkelstein and Hambrick, 1989). Family equity stakes may

increase the power of the family to influence board decisions and thus effectively enhance the ownership power of the manager. If the manager uses this power to control operating as well as board decisions, the manager may effectively be in a position to set his own compensation. An alternative view to the enhancement of managerial power through family holdings, is that family ownership of firm shares results in increased vigilance over the setting of management compensation. Residual equity of the firm is decreased by high levels of management compensation. To the extent that family members are equity holders, high levels of management compensation negatively impact their own personal wealth. Family members who hold equity stakes in the firm and are also members of the board are in a position to counteract the manager's ownership power arising from his personal stakeholdings, by constraining the levels of compensation earned by the manager. Consistent with this view and contrary to their hypothesized relationship, Finkelstein and Hambrick (1989) find a significant negative relationship between family ownership of firm shares and levels of management compensation.

Hypothesis MP9: Family ownership of firm shares will be associated with higher levels of management compensation.

Prestige Power

Finkelstein's (1992), fourth dimension of managerial power is prestige power or the power derived from the status of the manager. This source of power results from the ability to control uncertainty in the institutional environment (Finkelstein, 1992). The institutional environment faced by the firm consists of all persons or organizations external to the firm who have an interest in the firm.

The institutional environment includes customers and suppliers of the firm as well as regulatory authorities and the public at large. Prestige power may arise either as a result of other's perceptions of managerial influence (Useem, 1979), or as a result of managerial contacts with external actors in the institutional environment. Contacts with members of the institutional environment may provide the manager with information valuable to his own organization (Tushman and Romanelli, 1983). If the board perceives the top manager as influential in the institutional environment and the board believes that this influence is valuable to the organization, the board is more likely to grant higher compensation to an influential top manger than a top manager who has less influence in the institutional environment.

Managers may use membership on other corporate boards to obtain and disseminate information that is of value to the manager's own organization (Pfeffer, 1972 and Finkelstein, 1992). Useem (1979) suggests that membership on other corporate boards enables top managers to establish or maintain contact with important members of the corporate elite. Finkelstein (1992), believes that the latter type of contact enhances the perception of influence of the top manager in the view of others such as the board of directors. Thus membership of top managers on other corporate boards is consistent with greater prestige power.

Hypothesis MP10: The manager's membership on a higher number of other corporate boards will be associated with higher levels of management compensation.

Useem (1979) and Finkelstein (1992) view service to the community as an important factor in determining a manager's membership in the elite. Sitting on a non-profit board can be considered a measure of service to the community. "In addition to providing social contact for members, non-profit boards often bring together influential people in a forum that facilitates information exchange" (Finkelstein, 1992: pg. 515). Thus membership on non-profit boards, like membership on corporate boards, may serve to enhance the prestige power of top managers from the point of view of the board of directors.

Hypothesis MP11: The manager's membership on a higher number of non-profit boards will be associated with increased levels of management compensation.

Educational background may also enhance the manager's prestige power (Finkelstein, 1992 and D'Aveni, 1990). Based on the views of Clement (1975), and Useem (1979); Finkelstein (1992) suggests that educational background enhances a manager's power through other's perceptions of the manager's perceived influence as opposed to an increase in ability arising from the educational background. An "elite" education is viewed as enhancing the manager's prestige power through the manager's association with other influential members of the governing "elite" who have similar educational backgrounds.

Hypothesis MP12: A prestigious educational background will be associated with higher levels of management compensation.

Model Specification

The Principal Agent Model

Level of Management Compensation$_i$ = f(board of director attributes$_i$, firm size$_i$, firm complexity$_i$, firm performance$_i$, firm risk$_i$, managerial human capital$_i$)

Variability of Management Compensation$_i$ = f(board of director attributes$_i$, firm size$_i$, firm complexity$_i$, firm performance$_i$, firm risk$_i$, managerial human capital$_i$)

The Managerial Power Model

Level of Management Compensation$_i$ = f(structural power$_i$, expertise power$_i$, prestige power$_i$, ownership power$_i$)

Where the subscript i denotes firm i.

Chapter IV

Data Collection Methods and Descriptive Characteristics

Data Collection

The Sample

The sample was selected from the 1984 *Fortune 500* listing of the largest US industrial corporations for 1983, ranked by sales. To be included in the sample a corporation was required to have a complete set of proxy statements available in the University of Alberta Library, SEC files for the period 1982 to 1986 inclusive. Two hundred and fourty-eight companies did not meet this requirement. The other criteria for sample inclusion was separate disclosure of salary and incentive compensation data. One hundred and thirty of the companies for which a complete set of proxy statements was available, failed to meet this criteria. This resulted in a final sample size of one hundred and twenty-two companies.

All data measured in dollar terms is adjusted to 1990 constant dollars.

Compensation Data

A review of proxy statements indicates diversity in the compensation plans of top executive officers. Compensation plans for large corporations include salary and most often short term incentive compensation in the form of short term bonuses based on recent performance. Many compensation plans also include

some form of long term incentive compensation. Five major compensation plans which are commonly classified as long term are as follows:

Stock Options: The company provides executives with options to purchase a given number of shares at a specific price (usually the market price of the stock on the date of grant) within a specified period of time.

SARS: Sars are often granted in tandem with stock options. These rights allow executives to give up their option and receive the difference between the stock price and the exercise price of the option on the exercise date.

Restricted Stock: These are shares awarded to executives subject to restriction on sale. The restriction usually relates to the executive remaining in the employ of the corporation for a specified period of time. If the executive fails to do so, the stock is subject to forfeiture.

Phantom Stock: These plans are similar to restricted stock plans, however rather than receiving the stock when the restriction period has elapsed, the executive receives cash equal to the market value of the shares at the time the restriction elapses.

Performance Plans: These plans compensate executives based on performance over a three to five year period. The board establishes performance goals for the executive at the beginning of the performance period, usually based on accounting measures of performance. If performance goals are reached at the end of the performance period, the executive may receive cash awards, shares of stock, or options.

The Five Year Period

In this research, compensation level is measured as the average level of compensation for the manager over a five year period. A five year average of compensation is expected to more accurately reflect the compensation packages of the top manager for the following reasons:

A review of proxy statements indicates diversity among firms in reporting short term bonuses. For example, proxy statements do not always clearly specify when the bonus payment year differs from the bonus measurement year. Some proxy statements report the amount of the bonus awarded for the current year to be paid out over two years, while other proxy statements simply report the amount of the bonus paid out in the current year without reference to the year of the award. Awarding a bonus in one year to be paid out over a two year period is an example of smoothing. Smoothing can be built into bonus plans in another way. Short term compensation plans are usually based on some measure of accounting performance. If the performance criteria is met, the specified amount is credited to the bonus pool and awarded to management at the discretion of the board of directors. There is often no requirement that the entire bonus pool be paid out in any one year. Thus, amounts credited to the bonus pool in a previous period may be paid out in a subsequent period. This could result in bonus payments being made to management in a year of poor corporate performance.

Further difficulties with the use of a one year measure of compensation may be encountered because salary decisions are normally made at the beginning of

the year and are probably in part based on the expected rate of inflation, while short term bonus awards are normally made at the end of the year after corporate performance has been determined. If expected inflation is high but actual inflation is low, salary increases may be high while bonuses based on firm performance, which varies with the rate of inflation, may be low. The increase in salary may obscure the decrease in bonus such that the total compensation of the manager changes very little when corporate performance declines. Leonard (1990), examined the compensation of 20,000 executives at 439 corporations for the period 1981-1985. He found that in 1982 real wages of his executives rose by 5.3% when real GNP fell by 2.5%, while in 1983, 1984 and 1985 real wages rose approximately in line with real GNP. Leonard's analysis also reveals another factor which may have implications for compensation studies. He finds evidence of both error correction and mean reversion in the time series behavior of firm pay effects. Above average wage growth in a firm in one year tends to be followed by below average growth in the next year and firms with above average pay levels tend to have below average wage growth in the subsequent year.

When a firm uses stock options and SARS as a form of long term incentive compensation, these awards are normally made on a yearly basis. Unlike stock options and SARS, awards of restricted stock and long term performance awards are not commonly made on a yearly basis. According to the *New York Conference Board Reports*, long term performance plans are used by approximately 35% of firms. Amounts earned under these plans are usually based on firm performance over a three to five year period. Grants under these plans are reported in proxy statements. The amount eventually earned by the manager is however based on future firm performance; thus there is no

guarantee that the manager will earn the amount granted. To date no reliable methodology has been established to measure this form of compensation at the date of grant. A more reliable measure, for this type of compensation, is the amount of compensation actually earned under the plan. Amounts earned under the plan are however usually paid at the end of the performance measurement period, often resulting in high compensation in one year relative to other years. Thus when compensation earned in a year, under long term performance plans, is included in the definition of compensation, a one year measure of compensation may either understate or overstate compensation levels.

All of the factors noted above indicate that a five year average of management compensation will reduce measurement error in the level of compensation variable.

Measurement of Levels of Compensation

Proxy statements are usually issued approximately three to four months after the company's year end. Compensation data was gathered from 1982 to 1986 proxy statements. Thus compensation was measured as the five year average of compensation for the most highly remunerated manager of the corporation for the period 1981 to 1985 inclusive. Different firms often use different titles for executive officers. Although the most commonly used terminology was Chief Executive Officer (CEO), some firms did not use this terminology. Some firms included compensation information for the Chairman of the board and the CEO in the compensation table of the proxy statement. If this was the case and the Chairman was more highly compensated than the CEO, the Chairman was

chosen as the manager of interest. In conducting the analysis in this manner, I have made the assumption that the ultimate responsibility for the conduct of the firm's affairs rests with the most highly compensated individual.

Variable definitions are as follows:

AS: Five year average salary.

ASS: Five year average of salary and short term incentive compensation.

ASSL: Five year average of salary, short term bonus and long term incentive compensation excluding stock options and SARS. This definition of long term incentive compensation includes long term incentive compensation received in the year rather than long term incentive compensation granted based on attainment of future performance goals. Long term incentive compensation, such as restricted stock contingent solely on remaining in the employ of the firm was included because it did not depend on future firm performance. This measurement of long term incentive compensation is consistent with the measure used by Gaver and Gaver (1995), who included current payouts based on past grants of performance units in their definition of level of compensation.

ASSLG: Five year average of salary, short term bonus and long term incentive compensation including grants of stock options and SARS. The value of stock options and stock appreciation rights granted is measured as 25% of the exercise price of the stock options or SARS. Lambert, Larcker and Verrecchia (1991) and McConnell (1993) perform simulations which suggest that more sophisticated pricing models such as the Black-Scholes option pricing model

often produce values in this range. Further, Lambert, Larcker and Verrecchia (1991), argue that the Black-Scholes model is not appropriate for valuing executive stock options because the model is based on the ability of the investor to diversify the risk of holding the option. While shareholders are able to diversify this risk by holding a portfolio of securities, managers are not able to effectively diversify this risk because often a significant amount of the manager's wealth is associated with his position with the firm.

Measurement of Variability of Compensation

Variability of compensation is measured as the standard deviation of the levels of compensation over the five year period. As noted above, when a firm uses a long term performance plan as part of its compensation package and the amount paid out under the plan is included as a component of compensation for that period, compensation in one year may be high relative to compensation in another year. This will increase the standard deviation of compensation and may result in measurement error in the dependent variable. This increases the possibility that some of the independent variables may be significant as a result of correlation with the measurement error in the dependent variable rather than the correlation with the true variance. To examine this possibility I will conduct a sensitivity analysis by running regressions on the subsample of firms that do not have long term performance plans. Any changes in results arising from this sensitivity analysis will be addressed when I discuss the findings for the full sample for the managerial power model and the principal agent model.

SVSSLG: Standard deviation of total compensation measured over the period 1981 to 1985.

SVSSL: Standard deviation of total compensation excluding stock options measured over the period 1981 to 1985

SVSS: Standard deviation of the sum of salary and short term incentive compensation measured over the period 1981 to 1985.

SVS: Standard deviation of salary measured over the period 1981 to 1985.

TICPTC: Total incentive compensation as a percentage of total compensation, computed using the five year average of total incentive compensation over the period 1981 to 1985 and the five year average of total compensation measured over the period 1981 to 1985.

Size, Diversity, Performance and Risk Measures

Size and accounting performance measures were obtained from the COMPUSTAT files. Stock returns were obtained from the CRSP monthly return files. For the few cases where firm data was not available from these sources, the data was gathered from the individual annual reports of the relevant companies. Corporate diversity was measured as the number of different industries the firm was engaged in as represented by number of different two-digit SIC codes. This information was obtained from *Standard and Poor's Directory of Corporations* for 1983. Size, diversity, performance and risk measures are defined as follows:

Size

AVSALES: Five year average of firm sales for the period 1980 to 1984.

Complexity

TSIC: Number of different two digit SIC codes

Performance

ARET: Five year average of stock market return for the period 1980 to 1984.

AROA: Five year average of accounting return on assets for the period 1980 to 1984. Accounting earnings are defined as net income before discontinued operations and extraordinary items.

Risk

SDRET: Standard deviation of annual stock market return measured over the period 1980 to 1984.

SDROA: Standard deviation of accounting return on assets measured over the period 1980 to 1984.

Company Years, Age and CEO Years

These variables were measured for 1983, the mid year of the compensation data. The age of the top manager is always disclosed in the proxy statements, thus this variable was obtained from proxy statements. The number of years the top manager had been with the company and the number of years the top manager had been the top manager of the company are not always disclosed in the proxy statements. When this information was not available from the proxy statements, it was gathered from other sources such as: *Forbes Magazine* annual survey of the most highly paid US. executives, *Standard and Poor's Register of Corporations, Directors and Executives* and *Who's Who in Industry and Finance.*

AGE: Age of the top manager in 1983.

COYR: Number of years the top manager had been with the company in 1983.

CEYR: Number of years the top manager had been the top manager of the company in 1983.

Ownership Variables

These variables include firm share ownership by the top manager, ownership of firm shares by relatives of the top manager who were also on the board of directors and a measure of whether the top manager was a founder of the firm, a relative of the founder of the firm or had a relative on the board of directors or

as a member of management of the company. This data was gathered from proxy statements.

APSH: Five year average of percentage of firm shares held by the top manager over the period 1981 to 1985 inclusive. Firm shares held by the top manager include shares held by the manager's spouse and minor children, but do not include unexercised stock options.

FSH: Percentage of shares held by the extended family of the top manager in 1983. This does not include the top manager's own personal shareholdings, nor those of his wife or minor children.

FOR: Coded as: 0 if the top manager was not a founder or relative of the founder of the firm; 1 if the manager had a relative on the board of directors or as an executive officer of the firm but was not the founder or a relative of the founder of the firm; 2 if the top manager was the founder of the firm or a relative of the founder of the firm.

Other Top Manager Attributes Related to Prestige Power

These measures include the number of corporate boards the top manager sat on, the number of non-profit boards the top manager sat on and the type of education received by the top manager. Data on board membership was obtained from proxy statements. Data on education was obtained from proxy statements, *Standard and Poor's Register of Corporations, Directors and Executives* and *Who's Who in Industry and Finance*. These variables are measured for the 1983 year.

CBD: Number of other corporate boards the top manager sat on in 1983. This does not include membership on boards of subsidiaries of the firm.

NPBD: Number of non-profit boards the manager sat on in 1983.

EDUC: Coded as: 0 if the top manager had no formal higher education; 1 if both undergraduate and graduate schools were non-prestigious; 2 if one of the undergraduate or graduate schools was prestigious and 3 if both the undergraduate and graduate schools were prestigious. Appendix 1 includes a list of elite educational institutions used for the purposes of classification. These are the educational institutions considered prestigious by Finkelstein (1992).

Board Variables

Board variables include measures of: the top manager as chairman of the board, board size, proportion of external directors on the board, proportion of external directors appointed after the top manager, proportion of external directors on the compensation committee of the board of directors, mean number of other outside directorships held by external board members, proportion of external board members who are CEOs or retired CEOs, average tenure of external directors, the existence of significant blockholders and average percentage of firm equity held by external board members.

These variables were measured using information for 1983, the mid year of the management compensation data. It is appropriate to measure board attributes for the mid year of the compensation data because existing evidence indicates

that board structure is relatively invariant over time. Baysinger and Butler (1985) find that the proportion of external directors for their 266 industrial corporations changed from 46% in 1970 to 57% in 1980. They attribute this change to exogenous changes in the period under study. Hermalin and Weisbach (1988) find that poor performance can result in inside directors being replaced by outside directors. The effect is observed however for firms that are chronically poor performers. Their data also shows that external director shareholdings change little over time. Baysinger and Butler (1985), find that over the ten year period between 1970 and 1980 average board size remained virtually unchanged at about thirteen or fourteen members.

CHA: Coded as 1 if the top manager was also the chairman of the board in 1983, 0 otherwise.

PEX: Number of board members, who in 1983, were not managers of the firm, related to managers of the firm, or previous managers of the firm, divided by the total number of members on the board of directors. The individuals defined here are considered external board members.

PAEXA: Percentage of external board members who were appointed to the board of directors after the top manager was appointed to his position as top manager. This excludes external board members who were elected to the board in the same year that the top manager was appointed to his position.

PEXC: Percentage of external directors on the compensation committee of the board of directors.

ODEXM: Mean number of other directorships held by external board members. For the purpose of determining what constituted membership on another board, board memberships for charitable foundations, banks and insurance companies were excluded.

CEOEXP: Percentage of external board members who were CEOs or retired CEOs.

TENEXP: Mean board tenure of external directors.

TENCEYR: Mean board tenure divided by top manager tenure.

FPEX: Coded as 1 if their was an external blockholder who held more than 5% of the firm stock, 0 otherwise. A blockholder was considered external if the blockholder had no obvious ties to management. This resulted in exclusion of family blockholder and of blockholdings by company pension plans where the top manager voted the shares of the pension plan.

PSHODM: Mean percentage of firm shares held by external directors. This includes shares held personally by the external director and any shares owned by the external director's spouse or minor children.

Manager Changes

Of the 122 firms included in the sample, 32 experienced manager changes in the period 1981 to 1985. In no case was there more than one manager change for a firm in the sample in this period. For the firms which experienced a

manager change, compensation and managerial share ownership is calculated as though the manager change had not occurred. Variables such as company years, top manager position years, age and proportion of external directors appointed to the board after the top manager became the top manager, are measured for the executive who was the top manager in 1983. This may result in some measurement error, however, the sample size is already small. Manager changes are adjusted for in the regressions through a 0/1 dummy variable (MGCH) which takes on a value of 1 if there was a manager change in the period and 0 otherwise. I will also conduct a sensitivity analysis by running the regressions using the sub sample of firms for which there were no manager changes. Results which differ from those of the full model will be identified when I discuss the results for the full principal agent model and managerial power model.

Industry Effects

Gerhart and Milkovich (1990) and others have found that industry membership influences compensation practices. Lambert, Larcker and Weiglet (1993), found a significant positive relationship between levels of compensation and return on assets and stock market return for their pooled sample. Analysis of the effect for individual industries revealed the following: The relationship was positive and significant for the: Paper; Chemical; Machinery; Transportation Equipment and Instrumentation Equipment Industries. The relationship was not significant for the Food and Electrical Industries. The strongest relationship was found for the Paper and Machinery Industries. Garen (1994), utilized broad industry dummies in his empirical work. He merged some industrial classifications to obtain sufficient observations in each category. I have followed the same procedure.

The variable INDA is coded as 1 if a firm belongs to any of the following industries: Food and Beverages; Soaps; Metal Manufacturing; Glass, Concretes, Abrasives and Gypsum; 0 otherwise. The variable INDB is coded as 1 if a firm belongs to any of the following industries: Industrial, Transportation and Farm Equipment; Paper Fibre and Wood Products; 0 otherwise. INDA includes 27 firms and INDB includes 24 firms.

Descriptive Characteristics of the Data

Means, medians, standard deviations and minimum and maximum values for the defined variables are presented in Table 2.

Levels of Compensation

Compensation data is measured in millions of dollars. Average salary for the sample managers is $497,500 (median $490,400). Average salary and bonus is $723,800 (median $660,400). This is comparable to Jensen and Murphy's (1990) salary and bonus data which when adjusted to 1990 dollars is $766,000 (median $721,000) and Lambert, Larcker and Weiglet's (1993) mean cash compensation for 1982, 1983 and 1984, measured in 1990 dollars is $763,287 (median $713,740). Mean total compensation including stock options is $888,400 (median $761,700). Lambert, Larcker and Weiglet's (1993) mean level of total compensation (which includes the impact of grants under long term performance plans rather than amounts earned) is $1,114,509 (median $976,410). My compensation levels are lower than those of Lambert, Larcker and Weiglet (1993). This is attributable to firm size. Mean sales for my sample

firms are $4,747M (median $1,645M). Lambert, Larcker and Weiglet's (1993) mean and median sales are $7,289M and $3,033M respectively.

Variability of Compensation

Variability of compensation is measured as the standard deviation of yearly compensation over the five year period 1981 to 1985. The standard deviation of compensation is measured in millions of dollars. The mean standard deviation of salary is $52,100 (median $43,000). The mean standard deviation of salary plus short term bonus is $132,300 (median $105,400). The mean standard deviation of total compensation excluding stock options is $153,900 (median $116,600). The mean standard deviation of total compensation is $197,000 (median $152,000). The other measure of variability of compensation, TICPTC (total incentive compensation as a percentage of total compensation), has a mean of .3900. This indicates that the mean proportion of incentive compensation in the pay mix for the managers of the sample companies is 39%. Gaver and Gaver (1995) find a mean for total incentive compensation as a percentage of total compensation of 46.42%. However, their definition of incentive compensation is calculated for a one year period rather than as a five year average, and inexplicably includes both gains from the current period exercise of stock options and the present value of current stock option grants. This overstates incentive compensation associated with stock options.

Independent Variables

Mean stock market and accounting return are 13.97% and 5.55% respectively. These are comparable to the measures used by Lambert, Larcker and Weiglet (1993) of 13.62% and 3.69%.

Risk, measured as the standard deviation of stock market return (SDRET) and the standard deviation of accounting return on assets (SDROA) have means of .2974 and .0295 respectively.

Average tenure as top manager for managers in my sample is 8.4 years with a standard deviation as high as 7.15. Tenure of the top manager ranges from a low of 1 year to a high of 36 years. The number of years the top manager has been with the company also exhibits considerable variability. The mean number of company years is 24, while the minimum and maximum company years are 2 years and 47, years respectively. Age of the top manager is not as variable, evidenced by a lower standard deviation. The mean age of the top manager is 58 years, with a respective minimum and maximum value of 38 years and 73 years.

Top manager ownership of firm shares varies from a minimum of .01% to a maximum of 31%. Mean share ownership is 1.5% (median 2.4%). Mean and median CEO share ownership for Lambert, Larcker and Weiglet's (1993) sample is 1.6% and 10.2%, respectively. While my mean share ownership is very similar to that of Lambert, Larcker and Weiglet (1990), my median share ownership is considerably different and is closer to their measure of share ownership for the first quartile. My maximum share ownership of 31% is similar

to Lambert, Larcker and Weiglet's (1993) share ownership for their third quartile. The mean (1.18%) and median (0%) for family ownership of firm shares, is somewhat misleading because few managers in the sample had extended family members who owned firm shares. Similar results are observed for the variable which represents founder or relative of founder. Again few top managers in the sample were founding members of the firm, or were related to founding members of the firm or had relatives on the board of directors or as managers in the firm.

Sixty seven percent of the top managers of the sample firms were also the Chairman of the board of directors. This is comparable to Mallette and Fowler's (1992) results for 673 industrial manufacturing firms for the period 1985 to 1988, which had 71% of the sample CEO's also serving in the position of Chairman of the board.

The mean percentage of external board members is 64% (median 67%). These measures are similar to those of Lambert, Larcker and Weiglet (1993), mean 67% and median 67%. The mean percentage of external members on the management compensation committee of the board of directors is 87%. Few compensation committees in the sample include an internal member of the board. The mean measure of external directors appointed after the top manager became top manger is 49% (median 44%). Similar measures for Lambert, Larcker and Weiglet (1990) are 50% and 45%.

On average, the top manager of the sample companies sits on 2 other corporate boards and 1 non-profit board. The measure of education indicates that on average, most sample managers have some form of higher education.

Managers in the upper quartile tend to have either a graduate or an undergraduate degree from an elite educational institution.

The mean number of other directorships held by external board members is 2.4 which is virtually indistinguishable from the median number of other directorships held. On average 40% of external board members are CEOs or retired CEOs of other corporations. This measure ranges from a low of zero to a high of 87.5%. Mean and median tenure of external directors is 7.7 years, ranging from a low of 1 year to a high of 19 years.

Fourty-nine percent of the sample firms have an external 5% blockholder, virtually identical to Lambert, Larcker and Weiglet's (1993) measure which indicates that 48.6% of their sample firms had an external 5% blockholder.

Shareholdings of external board members are very low: Mean, .14%, median, .01% and maximum 3.76% and exhibit considerable variation: standard deviation, 4.3. I have used mean external director shareholdings. Lambert, Larcker and Weiglet (1993) used total firm shareholdings of external directors as their measure. Their measures are: mean, 1.12%; median, .05% and upper quartile 19.4%. Lambert, Larcker and Weiglet's (1993) external director shareholding measure can be recalculated assuming an average board size of 13 and external director proportion of 67%. The result is mean external board member shareholdings of: .13% (median .01%) and upper quartile of 2.23%. These measures are comparable to my measures.

Over-all, the characteristics of may data appear to be similar to the characteristics of data used in other compensation studies.

Chapter V

Model Estimation and Diagnostic Testing

Ordinary Least Squares (OLS) regression methodology is used to test the hypotheses. Table 1 includes definitions for all variables used in all of the regressions in the thesis.

Agency theory does not provide guidance with respect to the appropriate functional form for model estimation. As a consequence, the starting point of my analysis was to assume that the appropriate functional form of the model was linear.

For the principal agent model, OLS regressions were run on the unlogged versions of all variables for all definitions of levels and variability of compensation. The model was as follows:

$$\text{COMPENSATION LEVEL}_i = \beta_0 + \beta_1 PEX_i + \beta_2 ODEXM_i + \beta_3 CEOEXP_i + \beta_4 TENEXP_i + \beta_5 FPEX_i + \beta_6 PSHODM_i + \beta_7 APSH_i + \beta_8 FSH_i + \beta_9 AVSALES_i + \beta 1_{10} TSIC_i + \beta_{11} ARET_i + \beta_{12} AROA_i + \beta_{13} SDRET_i + \beta_{14} SDROA_i + \beta_{15} COYR_i + \beta_{16} AGE_i + \beta_{17} MGCH_i + \beta_{18} INDA_i + \beta_{19} INDB_i + E_i$$

$$\text{VARIABILITY OF COMPENSATION}_i = \beta_0 + \beta_1 PEX_i + \beta_2 ODEXM_i + \beta_3 CEOEXP_i + \beta_4 TENEXP_i + \beta_5 FPEX_i + \beta_6 PSHODM_i + \beta_7 APSH_i + \beta_8 FSH_i + \beta_9 AVSALES_i + \beta_{10} TSIC_i + \beta_{11} ARET_i + \beta_{12} AROA_i + \beta_{13} SDRET_i + \beta_{14} SDROA_i + \beta_{15} COYR_i + \beta_{16} AGE_i + \beta_{17} MGCH_i + \beta_{18} INDA_i + \beta_{19} INDB_i + E_i$$

Where the subscript i, denotes the measurement of the variable for firm i.

Compensation levels used in this research are: Salary (AS); salary and short term bonus (ASS); Salary, short term bonus and long term incentive compensation excluding stock options (ASSL) and total compensation including stock options (ASSLG). Variability of compensation used in this research is: Variability of salary (VS); Variability of salary and short term incentive compensation (VSS); Variability of salary, short term incentive compensation and long term incentive compensation excluding stock options (VSSL) and Variability of total compensation including stock options (VSSLG). In investigating the impact of the board of directors on the management compensation contract it is important to use total compensation as the measure of interest. Thus, most of the analysis is focused on total compensation levels and variability of total compensation.

Diagnostic tests of the regression results indicate some problems. The Jarque-Bera (1980) Lagrange Multiplier test for non-normality of OLS residuals produces values in the range of 9.7778 for the regression run on total compensation levels to 34.0604 for the regression run on salary, indicating that the assumption of normality of OLS residuals is violated (The critical value at the five percent level of significance is 3.84). Ramsey's (1969) RESET test for

non-linearity of functional form produces values within acceptable ranges for Reset (1) (The critical value at the five percent level of significance is 3.94). The assumption of linearity is violated, however, for Reset (2) and Reset (3) for all regressions, with values ranging from 4.745 and 4.299 for regressions run on total compensation to 5.102 and 5.098 for regressions run on the salary and short term bonus level of compensation. The Breusch-Pagan-Godfrey (1979), test for heteroskedasticity indicates that the assumption of homoskedacticity of residuals is not violated at conventional significance levels (Critical value at the five percent level of significance is 31.41). Values range from 28.343 for total compensation to 23.691 for the salary level of compensation.

The results for the LM test and the RESET test indicate both non-normality of residuals and a misspecified functional form. The RESET test suggests that there is curvature in the functional form, but does not specify the form of the curvature. One possibility in a situation such as this is to use logarithmic transformations of some of the variables. The functional form is then non linear, however, OLS can be applied to the resulting model because it is linear in the logs. To determine which variables logarithmic transformations should be applied to I examined the means and medians of the variables. Those variables which appeared to have somewhat skewed distributions were logged. Logged versions of levels of compensation and size measures are commonly used in compensation studies, see for example Garen (1994), Gaver and Gaver (1995), Gaver and Gaver (1992) and Finkelstein and Hambrick (1989). Thus, I log both levels and standard deviations of compensation to reduce skewness. Manager years, company years, manager age are also logged. The logged versions of share ownership measures were computed as follows: Percentage of firm shares held by the manager and percentage of firm shares held by family

members were computed as the log of one plus the percentage ownership. Although adding one before applying the logarithmic transformation does not reduce skewness as significantly as simply logging the variable, it was necessary to compute the logged version of the variables in this way because many of the firms in the sample had no family share ownership. A logarithmic transformation of percentage of external shares held by external board members was calculated. The means, medians, standard deviations, minima and maxima for these variables are found in Table 2. These descriptive statistics indicate a considerable reduction in the skewness of these variables.

Regressions were run for the principal agent model and the managerial power model where these models are specified as follows:

Principal Agent Model

$$\text{LOGGED COMPENSATION LEVEL}_i = \beta_0 + \beta_1 PEX_i + \beta_2 ODEXM_i + \beta_3 CEOEXP_i + \beta_4 TENEXP_i + \beta_5 FPEX_i + \beta_6 LNPSHODM_i + \beta_7 LAPSH_i + \beta_8 LFSH_i + \beta_9 LNSALES_i + \beta_{10} TSIC_i + \beta_{11} ARET_i + \beta_{12} AROA_i + \beta_{13} SDRET_i + \beta_{14} SDROA_i + \beta_{15} LNCOYR_i + \beta_{16} LNAGE_i + \beta_{17} MGCH_i + \beta_{18} INDA_i + \beta_{19} INDB_i + E_i$$

$$\text{LOGGED STANDARD DEVIATION OF COMPENSATION}_i = \beta_0 + \beta_1 PEX_i + \beta_2 ODEXM_i + \beta_3 CEOEXP_i + \beta_4 TENEXP_i + \beta_5 FPEX_i + \beta_6 LNPSHODM_i + \beta_7 LAPSH_i + \beta_8 LFSH_i + \beta_9 LNSALES_i + \beta_{10} TSIC_i + \beta_{11} ARET_i + \beta_{12} AROA_i + \beta_{13} SDRET_i + \beta_{14} SDROA_i + \beta_{15} LNCOYR_i + \beta_{16} LNAGE_i + \beta_{17} MGCH_i + \beta_{18} INDA_i + \beta_{19} INDB_i + E_i,$$

where the subscript i, denotes the measurement of the variable for firm i.

Managerial Power Model

$$\text{LOGGED COMPENSATION LEVEL}_i = \beta_0 + \beta_1 \text{LNSALES}_i + \beta_2 \text{LNCEYR}_i + \beta_3 \text{CHA}_i + \beta_4 \text{PAEXA}_i + \beta_5 \text{PEX}_i + \beta_6 \text{PEXC}_i + \beta_7 \text{TSIC}_i + \beta_8 \text{CBD}_i + \beta_9 \text{NPBD}_i + \beta_{10} \text{EDUC}_i + \beta_{11} \text{LFSH}_i + \beta_{12} \text{LAPSH}_i + \beta_{13} \text{FOR}_i + \beta_{14} \text{MGCH}_i + \beta_{15} \text{INDA}_i + \beta_{16} \text{INDB}_i + E_i,$$

where the subscript i, denotes the measurement of the variable for firm i.

Regression results and results of model specification tests are reported in Table 5 for the principal agent model and Table 7 for the Managerial power model. The Jarque-Bera (1980), Lagrange Multiplier test for non-normality of residuals indicates that the assumption of normality of residuals is not violated for any of the models. For the managerial power model, the Ramsey (1969) RESET test indicates violations of the assumption of linearity of the model at conventional significance levels. For the principal agent model the Ramsey RESET test indicates that the assumption of linearity of the model is not violated at conventional levels for both the level and variability regressions. This indicates that the appropriate functional form for the model is non-linear rather than linear because the results for the RESET test indicate that the assumption of linearity is not violated after variables are logged.

Discussion of Regression Results

In this section, I discuss the results of the principal agent model regressions and the managerial power model regressions. In general, I find that the principal

agent model has greater explanatory power with respect to management compensation than the managerial power model.

Principal Agent Model

Agency theory predicts that when greater risk is imposed on the manager through his compensation contract, the expected level of compensation will be higher. Garen (1994) investigated the relationship between the riskiness of compensation and the level of compensation by including a measure of pay performance sensitivity as an explanatory variable for the level of management compensation. Consistent with the predictions of agency theory, he found a significant positive association between pay performance sensitivity and the level of compensation. In developing my hypothesis for the agency theory model I relied on this prediction. Consequently, before I begin to discuss the results of the regression analysis it is important to determine whether my measure of variability of management compensation, (the standard deviation of compensation over a five year period), is a suitable proxy for the riskiness of the management compensation contract.

Correlations among the levels and variability measures of management compensation are presented in Table 4. The correlation between the log of the standard deviation of compensation over a five year period (LSVSSLG) and the log of total compensation (LNASSLG) is .694. The correlation between the ratio of incentive compensation to total compensation (TICPTC) and the level of total compensation is .733. These strong positive correlations are consistent the agency theory prediction that higher risk imposed on the manager through the management compensation contract will result in higher compensation levels.

This indicates that the log of the standard deviation of total compensation is a suitable proxy for the riskiness of the management compensation contract.

Regression results for the principal agent model are presented in Table 5. Results for both levels and variability of compensation are included in this table. In general the principal agent model has significant explanatory power for both levels and variability of compensation. The adjusted R^2 statistics for the levels and variability of pay indicate that the principal agent model explains approximately 69% of the level of compensation, and 54% of the variability of compensation.

Control Measures

Control variables impact management compensation in a similar manner to the findings of previous research. Firm size has a significant impact on both levels and variability of compensation. The coefficient (of .270) for the size variable in the levels regression can be interpreted as an elasticity and is consistent with elasticities for firm size and compensation found in previous compensation research; see for example, Gaver and Gaver (1995). Results for the measure of corporate diversity (TSIC) are weaker, with a significant association found between corporate diversity and level of management compensation and a positive but insignificant association found between corporate diversity and variability of management compensation [1].

[1] When the regressions are run on the two subsamples which exclude firms with manager changes and with long term performance plans, the coefficient for corporate diversity is positive but insignificant for the both the level and variability regressions.

Firm performance, defined as stock market return (ARET) has a significant positive impact on both level and variability of management compensation[2], while firm performance defined as accounting return on assets (AROA) has a significant positive impact on level of compensation and a positive but insignificant impact on variability of compensation. The coefficient for accounting return on assets is much larger than that of stock market return. This is consistent with previous studies such as Sloan (1993) and Lambert, Larcker and Weiglet (1993). Risk measures produce mixed results. The standard deviation of accounting return on assets (SDROA) is significantly positively associated with both level and variability of compensation[3]. This result is, as expected, stronger for variability of compensation than for level of compensation. Short term bonus compensation and long term incentive compensation is usually determined based on some measure of accounting return on assets; thus one would expect accounting return relative to the standard deviation of accounting return to have greater explanatory power for levels of compensation. Conversely, the standard deviation of accounting return should have greater ability to explain the variability of compensation than the level of accounting return. Contrary to the expected impact of risk on management compensation, the standard deviation of stock market return (SDRET) is negatively associated with both the level and variability of compensation. This association is weakly significant for variability of compensation but insignificant for level of compensation.

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[2] When the regressions are run on the subsample which excludes firms with long term performance plans, the stock market return has a positive but insignificant impact on the level of compensation and a positive and significant impact on the variability of compensation.

[3] For the regressions run on the two subsamples which exclude firms with manager changes and with long term performance plans, the impact of the standard deviation of accounting return on assets is positive but insignificant.

The number of years the manager has been with the company (LNCOYR) has a negative impact on level of management compensation and no significant impact on variability of management compensation[4]. This result is more consistent with the view that longer company tenure is indicative of a lower ability manager who would consequently earn lower levels of compensation than with the view that longer company tenure results in greater firm loyalty and a decreased requirement to link the manager's pay to firm performance. The manager's age (LNAGE) is significantly positively associated with both level and variability of management compensation, although statistical significance is not as strong for variability of compensation. These results suggest that greater pay risk is imposed on older managers because of limited time horizon problems and that this increased risk results in higher variability of compensation and consequently higher levels of compensation.

Board Measures

Over-all the results of the tests of predictions for the impact of the board of directors on management compensation provide mixed results. Some board measures are consistent with hypothesized directional predictions and are statistically significant. Other board measures are inconsistent with hypothesized directional predictions.

The proportion of external directors (PEX) on the board of directors has a strong positive impact on both level and variability of management compensation.

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[4] When the regressions are run on the subsample of firms which excludes firms with long term performance plans the impact of company years on the level of compensation is negative but insignificant. For the regressions run on the subsample of firms which excludes firms with manager changes the impact of company years is stronger in terms of an increase in the significance level of the coefficient.

Thus, it appears that managers of firms with more independent boards earn higher compensation than managers of firms with less independent boards and that managerial compensation exhibits higher variability in the presence of board independence. This result is similar to the findings of Lambert, Larcker and Weiglet (1993) with respect to the impact of the proportion of external board members on the level of management compensation. Both results are inconsistent with the hypothesis that more independent boards are more likely to monitor the actions of management resulting in enhanced risk sharing between managers and shareholders.

Individual external director attributes considered in the principal agent model, were: The number of other directorships held by external directors (ODEXM); External director experience as the top manager of another corporation (CEOEXP) and external director tenure on the board (TENEXP). Of these measures external director experience as the top manager of another corporation is the only measure consistent with the monitoring implications of agency theory. The number of other directorships held by external board members has a positive impact on both level and variability of management compensation. This is inconsistent with the view that external directors who value additional corporate directorships will have an increased incentive to monitor the actions of management and that other corporate directorships held by external board members will result in a greater ability to monitor the actions of management.

The presence of external board members who are managers or retired managers of other corporations is significantly negatively associated with both level and variability of management compensation. Managers appear to earn

lower compensation and have lower risk imposed on them when a greater proportion of external board members are managers or retired managers of other corporations. To the extent that experience as a top manager enhances the ability of external directors to monitor the actions of management, these results are consistent with the predictions of agency theory regarding the monitoring role of corporate board members.

Longer tenures of external board members were also suggested as a measure of external director ability to monitor the actions of management. Results indicate a significant negative impact of tenure of external board members on the variability of management compensation and no impact on the level of management compensation[5]. For this sample of managers, managers of firms whose boards have longer tenures appear to have less risky compensation contracts without impacting the level of their compensation. The predictions of agency theory suggest that lower risk in the compensation contract should be associated with lower levels of compensation. Thus for the full sample of firms the results are inconsistent with the predictions of agency theory.

The results for the existence of a significant external blockholder (FPEX) are similar to the results found for the proportion of external board members. The presence of a significant external blockholder has a positive impact on both level and variability of management compensation[6]. This result fails to confirm the hypothesis that the presence of significant external blockholders will lead to

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[5] When the regressions are run on the subsample of firms which excludes firms with long term compensation contracts, the impact of tenure of external directors is negative and significant for both the levels and variability regressions. Thus for the reduced sample the predictions of agency theory are supported.

[6] When the sample is restricted to firms without long term performance plans the existence of a significant external blockholder has a positive but insignificant impact on both the level and variability of compensation.

increased monitoring of managerial actions, hence lower levels and variability of management compensation. Results found here are also dissimilar to some of the results found in previous research. Lambert, Larcker and Weiglet (1993), find a significant negative association between the presence of a significant external blockholder and the level of management compensation. Consistent with the monitoring hypothesis, Mehran (1995), finds a negative association (10% significance level) between equity compensation as a percentage of total compensation and percentage of firm equity held by institutional investors, individual investors and corporations who owned at least 5% of the firm's stock.

The results for ownership of firm shares by external directors, managers and the family of managers also provides inconsistent support for agency theory. The mean percentage of shares held by external board members (LNPSHODM) has a negative but insignificant effect on the level of compensation and virtually no impact on the variability of compensation. This result does not provide support for the agency theory prediction that external director shareholdings provide these directors with an incentive to improve risk sharing through monitoring of managerial actions.

The percentage of firm shares held by the manager of the firm (LAPSH) has a positive impact on both level and variability of compensation. These results do not support the idea that management ownership of firm shares results in interest alignment between the owners and the manager of the firm, with a consequent reduction in the need to link the manager's pay with firm performance. This result is also inconsistent with the findings of Lambert, Larcker and Weiglet (1993) who found a negative and significant association between equity ownership of the firm manager and level of compensation.

In contrast to the results for management ownership of firms shares, family ownership of firm shares has a strong negative impact on both levels and variability of compensation. This provides support for the hypothesis that ownership of firm shares does provide family board members with the incentive to monitor the actions of management, thus enhancing risk sharing between the managers and the owners of the firm.

Although the board of directors appears to have an impact on both the levels and variability of management compensation, the results found here are not unambiguously consistent with the predictions of agency theory. Both family ownership of firm shares and the experience of external directors as managers and retired managers of other corporations are consistent with risk sharing arguments related to the monitoring function of board members. The proportion of external board members on the management compensation committee of the board of directors and firm equity ownership by external board members appear have the effect of decreasing the level of management compensation without impacting the variability or riskiness of that compensation. Tenure of external directors appears to decrease the variability of management compensation without impacting the level of that compensation. These results indicate that these measures do have some impact on management compensation, but that this impact is only partially consistent with the predictions of agency theory. The results for the proportion of the board composed of external members and the existence of a significant block holder are inconsistent with the monitoring and risk sharing arguments of agency theory.

Managerial Power Model

Table 7 includes the results of the regression analysis for the managerial power model.

Structural Power

The relationship between firm size (LNSALES) and total compensation is positive and significant, consistent with the hypothesis that managers of larger corporations receive higher compensation as a result of structural power. The association between job tenure (LNCEYR) and compensation is not in the hypothesized direction. The presence of a top manager who is also Chairman of the board (CHA) is weakly positively associated with level of compensation[7]. The association between percentage of external directors appointed after the manager achieved his position as top manager (PAEXA) and compensation is in the hypothesized direction, but is not significant at conventional levels. These results provide some evidence that structural power of the top manager results in higher levels of compensation. I had hypothesized that a higher proportion of external directors (PEX) on the board would result in constraints on managerial power to obtain high levels of compensation. The opposite relationship was found. Boards with a higher proportion of external directors appear to pay their top managers more than boards with lower proportions of external directors. It is also consistent with the findings of Lambert, Larcker and Weiglet (1993). The association between the proportion of external directors on the compensation

[7] For the regressions run on the subsamples of firms which exclude firms with manager changes and firms with long term performance contracts, the results for this measure are positive but insignificant.

committee of the board of directors (PEXC) and compensation is negative, as hypothesized, but statistically insignificant[8].

To examine the importance of structural power for the model, I conducted a test of restrictions of the structural power measures. The test was conducted on two levels. First I tested the restrictions by excluding all variables related to structural power from the model. The F value for this test was 9.44 (critical value at the five percent level of significance: 2.10). Secondly I tested the restrictions by excluding from the test of restrictions variables that were significant in the opposite direction to the related hypotheses. This resulted in the exclusion of the proportion of external directors from the set of restrictions. The F value for this test was 11.317 (critical value at the five percent level of significance: 2.21). Both of these results indicate that structural power has an important impact on management compensation.

Expert Power

Corporate diversity as represented by TSIC is positive, i.e. in the hypothesized direction. It does not, however, appear to have a significant impact on managerial compensation. Thus, the results fail to support the hypothesis that managers of more diversified firms receive higher compensation as a result of their expert power. Since this was the only measure of expert power included in the model, the results indicate that expert power does not appear to be an important determinant of management compensation.

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[8] When the regressions are run on the subsamples of firms which exclude firms with manager changes and firms with long term performance plans, the coefficient for this measure is negative and significant. Thus, for the reduced samples of firms, independence of the compensation committee of the board of directors does appear to constrain the manager's power to exert his preferences for higher levels of compensation.

Prestige Power

Results for prestige power provide mixed evidence for the impact of prestige power on management compensation. The number of other corporate boards the manager sat on (CBD) and the elite education (EDUC) both have a negative and insignificant impact on management compensation[9]. If the number of other corporate boards the manager sat on and elite education are appropriate measures of prestige power, these results fail to support the hypothesis that prestige power enables the manager to obtain higher levels of compensation. The number of non-profit boards the manager sat on (NPBD) has a positive impact on the level of management compensation, consistent with the hypothesized impact. To examine the importance of prestige power, I conducted a test of the restriction on the prestige power variables. The F value for this test was 1.278 (critical value at the five percent level of significance: 2.60). Taken together, these results indicate that prestige power does not appear to be an important determinant of management compensation.

Ownership Power

The predictions of the managerial power model with respect to ownership power do not appear to be supported by the results. Managerial ownership of firm share (LAPSH), has an impact in the hypothesized direction, but this impact is not significant. The position of the manager of the firm as the founder or a relative of the founder of the firm (FOR) has a very weak positive impact on

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[9] For the subsample of firms which do not have long term performance plans, the coefficient for other corporate boards (CBD) is positive and significant, providing some support for the hypothesis that prestige power emanating from the manager's membership on other corporate boards enables the manager to exert his preferences for higher compensation.

management compensation, consistent with the hypothesized relationship for ownership power. In contrast to these results, family ownership of firm shares (LFSH), has a negative and highly significant impact on management compensation. Thus family ownership of firms shares does not appear to augment the manager's power to obtain higher levels of compensation. In fact, family ownership of firm shares appears to act as a constraint on the manager with respect to exerting his preference for higher levels of compensation. Table 8 includes the correlations between the independent variables for the managerial power model. The correlation between family ownership of firm shares and founder or relative of the founder of the firm is .661. Over-all, the regression results indicate that, while the manager's position as founder or as a relative of the founder of the firms gives him some power to obtain higher levels of compensation, the power arising from this position is constrained by the presence of other family members on the board of directors. The importance of ownership power was examined on two levels. First, I tested performed a test of restrictions for all three of the ownership measures. The F value was 3.135 (critical value at the five percent level of significance: 2.60). Secondly, I performed a test of restrictions for managerial ownership of firm shares and the manager's position as founder or a relative of the founder of the firm. The F value for this test was 1.159 (critical value at the five percent level of significance: 3.00). These results indicate that ownership power does not appear to be an important determinant of management compensation.

In summary structural power (as measured in this study) appears to be the main power base that top managers use to obtain higher levels of compensation. Expert power, ownership power and prestige power of the top manager (as

defined in this study) appear to have a minimal impact on top manager compensation.

The regression results for both the principal agent model and the managerial power model indicate that the board of directors does have some impact on management compensation. However, neither of these theories is fully supported with respect to the observed results for the respective models. In the next chapter, I investigate the robustness of these results to alternative definitions of levels of compensation and I present the results of a test to determine which model has the greater power to explain management compensation.

Chapter VI

Model Selection Tests

In this chapter, I investigate the robustness of the regression results for the principal agent model and the managerial power model to alternative definitions of levels of compensation. I also present the results of a test designed to determine which of the two models has greater power to explain the observed levels of management compensation.

Robustness Of Results

Previous research has used various different definitions of compensation as the dependent variable of interest. Salary and short term bonus has been used as the definition of compensation on the basis that long term incentive compensation is difficult to obtain and/or difficult to reliably measure. Abowd (1990), Sloan (1993) and Finkelstein and Hambrick (1989) all use salary and short term bonus as their measure of management compensation. Lambert, Larcker and Weiglet's (1993) compensation study includes a measurement of compensation similar to mine, with the exception that long term incentive compensation excluding the impact of stock options includes incentive compensation granted in a particular year rather than incentive compensation earned in a particular year. To determine whether my results for levels of compensation are robust to alternative definitions of compensation, I ran additional regressions for the two models on the levels of the following definitions of compensation: Salary (LNAS); Salary and short term bonus (LNASS) and Salary, short term bonus and long term incentive compensation

excluding stock options (LNASSLG). The results of these regressions are presented in Table 9 for the principal agent model and Table 10 for the managerial power model.

Principal Agent Model

Results indicate that the over-all explanatory power of the model is consistent over the various definitions of levels of compensation that include some form of incentive compensation. The R^2 statistic ranges from 65% for salary and short term bonus to 67% for total compensation including stock options. This indicates that results found are not the result of the particular definition of compensation used in this research. The R^2 statistic for the salary level of compensation is considerably lower than for the definitions of compensation that include incentive compensation. This is a sensible result because, from an agency theory perspective, firm performance should not impact fixed compensation in the way that it is expected to impact incentive compensation.

Results for the individual regressors for levels of compensation, which include incentive compensation, are generally similar to the results discussed in Chapter V for the level of total compensation. However, in some cases results are stronger. The impact of external board member equity ownership of firm shares has a weakly significant negative impact on the level of long term compensation excluding stock options. This measure did not have a significant impact on total compensation. Tenure of external board members has a weakly significant negative impact on the salary level of compensation indicating that when manager's whose boards have longer tenure receive lower salaries. Management ownership of firm shares has a positive but insignificant impact on

total compensation. However, it has a positive and significant impact on all other levels of compensation. This result is not congruent with the agency theory view that higher ownership of firm shares should result in interest alignment between the owners and managers of the firm resulting in lower compensation for managers who have higher firm equity stakes. In summary, the results presented in chapter VI do not appear to be an artifact of the definition of compensation used in this research.

Managerial Power Model

The R^2 statistic for the model for the various definitions of levels of compensation ranges from 48% for the salary level of compensation to 52% for level of total compensation. Thus, results appear to be invariant to the definition of level of compensation.

Results for the individual regressors are generally consistent with those discussed in Chapter VI. Results are different for the following regressors: Membership on non-profit boards by managers (NPBD) does not have a significant impact on the salary level of compensation. Management membership on other corporate boards (CBD) has a weak positive impact on salary and bonus compensation and an insignificant and negative impact on total compensation. When total compensation is considered, management ownership of firm shares (LAPSH) has a positive but insignificant impact on level of compensation. This effect becomes positive and significant for the other two levels of compensation which include incentive compensation, and is particularly strong for the salary and bonus level of compensation. Thus, the impact of management ownership of firm shares does appear to be consistent

with the predictions of managerial power theory when alternative definitions of compensation are considered. The impact of the proportion of external board members on the management compensation committee of the board of directors (PEXC) has a weakly significant negative impact on the salary and bonus level of compensation, providing some evidence that compensation committee's composed solely of external board members, constrain the manager's power to obtain higher levels of compensation. Over-all these results indicate some weak sensitivity to alternative definitions of levels of compensation.

Model Selection Tests

The results discussed above indicate some support for the impact of the board of directors on the management compensation contract for both the principal agent model and the managerial power model. This suggests that it may be important to consider both theories to explain management compensation. In this section, I conduct a test to determine whether either of the two models may be considered the "true" model for the determination of management compensation. The two models are non-nested in that all of the regressors are not common to both models. Thus, it is not possible to use an ordinary test of restrictions to perform the test. Davidson and MacKinnon (1981) have developed a non-nested test suitable for examining model adequacy between competing models.

The J test is set up in two stages. In the first stage we wish to test whether the agency model may be the "true" model. This can be set out formally as follows:

H_0: y = PA

H_1: y = MP,

where PA indicates the agency model and MP indicates the managerial power model.

To test this hypothesis, the following regression is set up:

H3: $y = (1 - \alpha)$ PA + α MP,

where MP are the predicted values from regressions run on the managerial power model.

We then test:

H_j: $\alpha = 0$ against H_{ja}: $\alpha \neq 0$

If H_j is rejected then the agency model is a false model. If H_j is not rejected then the agency model may be the "true" model. Put another way, if H_j cannot be rejected, then the data supports the agency model relative to the managerial power model.

In the second stage we wish to test whether the managerial power model may be the "true" model. This can be set out formally as follows:

H_0: y = MP

H_1: y = PA

where MP indicates the managerial power model and PA indicates the agency model.

To test this hypothesis, the following regression is set up:

H3: $y = (1 - \alpha)$ MP + α PA,

where PA are the predicted values from regressions run on the agency model.

We then test:

H_j: $\alpha = 0$ against H_{ja}: $\alpha \neq 0$

If H_j is rejected then the managerial power model is a false model. If H_j is not rejected then the managerial power model may be the "true" model. If H_j cannot be rejected, the data supports the managerial power model relative to the agency model.

Results of the J test are set out in Tables 11 and 12. Table 11 includes the results of including the predicted values from the managerial power model as an individual regressor in the agency model. This regressor is denoted MP. It is not significant for the regression run on total compensation. It is significant at the 10% level for the regression run on long term compensation excluding stock options and significant at the 5% level for the other two definitions of levels of compensation. These results indicate rejection of the managerial power model at the level of total compensation providing some support for the agency model as the "true" model. When all of the levels regressions are considered, however, the results indicate that the data do not support the agency model relative to the managerial power model[1].

Table 12 sets out the results of including the predicted values from the agency model as an individual regressor in the managerial power model. This regressor is denoted as PA. This regressor is highly statistically significant for all

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[1] The J - Test was also conducted using two other specifications of both the principal agent model and the managerial power model. In the first specification variables which were significant in a direction opposite to the hypothesized direction were omitted from the two models. For this specification the coefficient for the MP regressor was insignificant for the both definitions of compensation which include long term incentive compensation. In the second specification only those variables significant in the hypothesized direction were included in the two models. For this specification the MP regressor was not significant for any of the levels of compensation. These results should be interpreted with caution because omission of variables from the models may result in underspecification of the models. McLeer, Fisher and Volker (1982) find that overspecification results in consistent tests of the null hypothesis whereas underspecification may lead to inconsistent results.

definitions of levels of compensation[2], indicating that the data does not support the managerial power model and suggesting that the agency theory model has strong explanatory power with respect to management compensation. Taken together the results from the J test indicate that at the level of total compensation the agency theory model is the preferred specification. For the other levels of compensation the managerial power model appears to have some limited explanatory power in addition to that provided by the agency theory model. The strength of the statistical significance of the PA regressor over all specifications of the model suggest that the agency theory model is superior to the managerial power model. Despite these results it is interesting to note that some of the variables for the principal agent model and the managerial power model do not conform to the hypotheses advanced with respect to those variables. Consequently it may be useful to consider aspects of both agency theory and managerial power theory to explain the results. Thus, in Chapter VII, I reexamine the Chapter V regression results, from the point of view of both managerial power theory and agency theory.

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[2] As noted above the J - Test was also conducted using two other specifications of both the principal agent model and the managerial power model. For both of these specifications the PA regressor was highly statistically significant for all definitions of levels of compensation.

Chapter VII

Reinterpretation of Regression Results

In this chapter I reconsider the regression results discussed in Chapter V from the point of view of both managerial power theory and agency theory. The predictions of agency theory indicate that effective monitoring should reduce the level and amount of risk sharing necessary to induce the manager to act in the best interests of the shareholders. Agency theory, however, assumes that the manager of the corporation has no power to exert his own preferences in the negotiation of the management compensation contract. The Chapter V results indicate that the manager of a corporation may have some power to determine his compensation. Thus the implications of the monitoring characteristics of the board of directors may be defeated in the presence of a powerful manager.

Since the manager is assumed to be a risk averse rational utility maximizer, one can assume that the manager would prefer higher levels of compensation to lower levels of compensation and would prefer that his compensation be less, rather than more risky. The predictions of agency theory indicate that expected compensation levels will be higher when the compensation contract is riskier and lower when there is less risk imposed on the manager through his compensation contract. When the manager has the power to negotiate a compensation contract which includes less than optimal risk sharing between the manager and the owners of the corporation, one of two situations may occur. A powerful manager may be able to obtain higher expected levels of compensation without any impact on the riskiness of that compensation or he may be able to reduce the riskiness of the compensation contract without

impacting the expected level of his compensation. These predictions would be consistent with higher observed levels of compensation with no impact on the variability of compensation or lower variability of compensation with no impact on the level of compensation. If the board of directors is more powerful than the manager, the board may be able to constrain the manager's preferences for higher compensation without impacting the riskiness of that compensation or the board may be able to increase the riskiness of compensation without increasing the expected level of compensation. Thus, when the board is more powerful than the manager one would expect to observe either lower compensation levels with no impact on the variability of compensation or increased variability of compensation with no impact on the level of compensation.

In order to examine the impact of the managerial power model on both levels and riskiness of compensation, I ran a regression of the managerial power model on the variability of total compensation (LSVSSLG). These results are included together with the regression results for the managerial power model on levels of compensation in Table 11. The discussion below is organized as follows. First I discuss the results for board measures that are common to both the principal agent model and the managerial power model. Secondly, I discuss the results for the board measures which are not common to both models. Finally, I consider the results for ownership measures and management membership on other boards of directors.

Results For Board Measures Common To Both Models

To the extent that greater board independence is consistent with enhanced monitoring activities of the board of directors, a higher proportion of external members on the board of directors should results in both lower levels and variability of management compensation. From a managerial power perspective, a higher proportion of external members on the board of directors should constrain the managers power to obtain higher levels of compensation with no increase in the riskiness of that compensation, or to decrease the riskiness of compensation with no impact on the level of the compensation. If the proportion of external members on the board of directors is consistent with lower managerial power, one would expect to observe either lower compensation levels with no impact on the variability of compensation or higher variability of compensation with no impact on the level of compensation. For the managerial power model and the agency model the proportion of external board members has a significant positive impact on variability of compensation. If the results indicated no significant impact for proportion of external board members on levels of compensation, these results would be consistent with a managerial power theory argument. The results, however, indicate a significant positive impact for the proportion of external directors on levels of compensation for both the managerial power theory model and the agency model. Thus, the results are inconsistent with the predictions of managerial power theory. These results are also inconsistent with the agency theory view that greater board independence enhances monitoring activities by the board of directors.

Results For Board Measures Not Common To Both Models

The principal agent model results for the impact of other directorships held by external directors (ODEXM) were not consistent with a monitoring role for these types of directors. An alternative view of the impact of other external directorships is as follows. External directors who hold directorships on other corporate boards may be ineffective as monitors. Mace (1986), Herman (1981) and Pfeffer (1972), claim that managers dominate the director selection process. A powerful manager may choose to select "professional directors" to fill vacant board positions. "Professional directors" are those whose main occupation is sitting on other corporate boards. These types of directors are dependent on firm management for their livelihood and would be unlikely to oppose managerial decisions or to effectively monitor management. Directors who value the opportunity to serve on other corporate boards may have an incentive to establish a reputation for not "rocking the boat" or not monitoring managerial behavior, (Hermalin and Weisbach, 1995). If external directors value the opportunity to sit on other corporate boards, they may as Hermalin and Weisbach (1995) suggest, be willing to de-emphasize the link between management pay and firm performance without decreasing the level of management compensation, or increase the level of the manager's compensation without increasing the riskiness of that compensation. The principal agent model regression results indicate a significant positive effect (10% level of significance in a two-tailed test) for this measure for the level of compensation and no significant impact for this measure for the variability of compensation. Thus, consistent with managerial power theory, managers whose external board members hold a greater number of directorships on other

corporate boards appear to be able to earn higher levels of compensation without an increase in the riskiness of that compensation.

In the principal agent model I examined the impact of the mean tenure of external directors (TENEXP) on levels and variability of compensation. This measure had a significant negative impact on the variability of compensation but no significant impact on the level of compensation[1]. The results for the full sample of firms was not consistent with the predictions of agency theory with respect to monitoring by the board of directors. From a managerial power theory perspective, if longer tenures of external directors is associated with greater board power relative to management power one should observe either a lower level of compensation with no impact on the riskiness of compensation or an increase in the riskiness of the compensation with no impact on the level of compensation when the board of directors is comprised of external directors with longer tenures. Results found are not consistent with either of these directional predictions. When external board members have longer tenure there appears to be a significant decrease in the variability of the compensation with no significant impact on the level of compensation. This suggests that managers whose external board members have longer tenures are able to reduce the riskiness of their compensation without impacting the level of their compensation.

Similarly strange results are found for the impact of the proportion of external directors appointed to the board after the manager became the top manager of the corporation (PAEXA). The results for the managerial power model indicate

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[1] For the regression run on the reduced sample excluding firms with long term performance plans the coefficient for this variable was significant and negative for the level of compensation.

that this measure has the impact of significantly increasing the variability of compensation with no impact on the level of compensation. The managerial power theory view is that the manager, through his influence in the director selection process, will select board members whose loyalties lie with management rather than with shareholders. Because of this the manager is able to influence these directors in the process of negotiation of his compensation contract, so that he either receives higher compensation with no increase in the riskiness of his compensation, or reduces the riskiness of his compensation with no impact of the level of his compensation. The results noted above are not consistent with these predictions.

From an agency theory perspective the existence of a significant external blockholder is expected to be associated with enhanced monitoring of managerial actions. This should enhance risk sharing resulting in a lower expected level and variability of compensation. If, however the existence of a significant external blockholder is consistent with managerial power theory, the existence of a significant external blockholder should result in either a lower level of compensation without a decrease in the riskiness of that compensation, or an increase in the riskiness of compensation with no impact on the level of compensation. Results for the agency model indicate that the existence of a significant external blockholder (FPEX) has a positive impact on both levels and variability of compensation[2]. These results are not consistent with the agency theory view that the existence of a significant external blockholder enhances monitoring of managerial actions by the board of directors. In the agency theory model, the impact of this measure is significant and positive for both level and

[2] When the regressions are run on the reduced sample excluding firms with long term performance plans to coefficient for this variable for both the level and the variability of compensation is positive but insignificant.

variability of compensation (significant at the 5% and 10% level respectively in a two tailed test). The positive impact on variability of compensation of a significant external blockholder is only consistent with managerial power theory if the measure is also associated with no significant impact on the level of compensation. Thus, the results for this measure do not appear to be congruent with either an agency theory view or a managerial power theory view of compensation.

Firm equity holdings by external directors may provide these directors with an incentive to monitor the actions of management. If this is the case, one would expect to observe both lower levels and variability of management compensation for managers whose external board members own higher levels of firm equity. From a managerial power perspective, ownership of firm equity by external directors may enhance the power of the board relative to the power of the manager. This should result in either lower levels of compensation with no decrease in the variability of compensation, or higher variability of compensation with no impact on the level of compensation. The principal agent model regression results for firm equity ownership by external directors (LNPSHODM), indicate a negative impact for this measure on the level of management compensation and a positive impact for this measure on the variability of compensation. Neither result is, however, statistically significant. Thus the results fail to conform to a managerial power theory explanation and are inconsistent with the agency theory view that firm equity ownership by external directors results in increased monitoring efforts by the board of directors.

In the managerial power theory model I examined the impact of the proportion of external board members on the management compensation committee of the board of directors (PEXC). I hypothesized that this measure would have the impact of decreasing the level of management compensation. The results indicate that this measure has a negative but insignificant impact on the level of compensation. For this result to be consistent with managerial power theory, the measure of the proportion of external directors on the management compensation committee should have a significant positive impact on the variability of compensation[3]. Results for the variability regression for the managerial power model, are not consistent with this expectation.

Board activists have been highly critical of the dual function of Chairman of the board and the top manager of the firm. It has been suggested that this dual role results in a conflict of interest and threatens the independence of the board of directors. The independence of the board may be compromised if the dual role enables the Chairman/manager to control information flowing through to the board of directors, resulting in a reduced ability to monitor the actions of management. The alternative view is that the dual role of Chairman/manager results in a higher level of responsibility for the conduct of the firms affairs resting with the Chairman/manager. Both views are consistent with the expectation that a manager, who is also the Chairman of the board, will receive higher levels of compensation. The view that the dual role of Chairman/manager gives the manager more power over the board of directors, may give the Chairman/manager the ability to earn higher levels of

[3] The results for this measure in the regressions run on the two reduced samples (firms with manager changes omitted and firms with long term performance plans omitted) indicate that the independence of the compensation committee has a significant negative impact on the level of management compensation and no significant impact on the variability of compensation. These results are consistent with a managerial power theory explanation.

compensation, but resist strong links between pay and firm performance. Thus the managerial power theory view of the impact of the Chairman/manager position on the compensation contract, suggests that one would expect to observe higher compensation levels with no impact on the variability of compensation. This expectation is consistent with the observed results. The dual role of Chairman/manager (CHA) has the impact of increasing compensation level without affecting the variability of compensation. The results are also consistent with the argument that the dual role of Chairman/manager results in a higher level of responsibility for the Chairman/manager and as consequence the fixed component of the Chairman/manager's compensation is increased to compensate him for the additional responsibility. In this is the case, because the fixed component of pay will not increase the variance of pay, one would also expect to observe higher pay levels with no increase in the variability of pay. Thus the results for the Chairman/manager measure cannot be attributed unambiguously to a managerial power argument.

Results For Ownership Measures

Managerial power theory and agency theory make dissimilar directional predictions for the impact of managerial ownership of firm shares on the level of management compensation. From an agency theory perspective, management ownership of firm shares is expected to result in interest alignment between the manager and owners of the firm, reducing the need to tie the manager's pay to firm performance. This implies that both the level and variability of compensation should be lower when the manager has a higher equity stake in the firm. On the other hand, higher firm equity stakes may enhance the manager's power to exercise his preferences with respect to his compensation.

When this is the case, the manager may use his power to either obtain higher pay with no increase in the riskiness of that pay, or he may be able to reduce the riskiness of his pay with no impact on the level of his pay. The measure of managerial ownership of firm shares (LAPSH) was included in both the principal agent model regressions and the managerial power model regressions. For both regressions and for both levels and variability of compensation the results are positive but insignificant[4]. Thus, for the full sample of firms, the results fail to support either theory with respect to the impact of managerial ownership of firm shares on management compensation.

Managerial power theory and agency theory also make dissimilar directional predictions for the impact of family ownership of firm shares on management compensation. Agency theory predicts that family ownership of firm shares will provide an increased incentive for family members who sit on the board of directors to monitor the actions of management resulting in a decrease in both the level and variability of management compensation. Managerial power theory, suggests that ownership of firm shares by family members will enhance the manager's power to exert his influence to obtain his preferences with respect to his compensation. If ownership of firm shares by family members enhances the manager's power, family ownership of firm shares should be associated with either higher levels of compensation with no impact on the variability of that compensation, or lower variability of compensation with no impact on the level of compensation. Family ownership of firm shares (LFSH) was included as a measure in both the principal agent model regressions and

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[4] The principal agent model run on the reduced sample which excludes firms with long term performance plans indicates a positive and significant impact of managerial ownership of firms shares on the level of management compensation and no significant impact on the variability of compensation. This result is consistent with the managerial power theory view of the impact of managerial ownership of firm shares.

the managerial power model regressions. This measure has a significant negative impact on level and variability of compensation for both models, suggesting that family ownership of firms shares impacts management compensation in a manner consistent with the predictions of agency theory and inconsistent with the predictions of management power theory.

The last ownership measure considered was the position of the manager as the founder or as a relative of the founder of the firm (FOR). This measure is included in the managerial power model. The results discussed above in Chapter V were consistent with the view that the position of founder or relative of the founder of the firm enhanced the manager's ability to exert his preferences for higher levels of compensation. The results for the managerial power variability regressions indicate that this measure is significantly negatively (10% level in a one-tailed test of the hypothesis) associated with the riskiness of the manager's compensation. Thus, consistent with managerial power theory, a manager who is the founder or a relative of the founder of the firm is able to simultaneously increase the level of his compensation and decrease the riskiness of his compensation.

Management Membership On Other Boards Of Directors

In the managerial power model I considered the impact of the manager's membership on other corporate boards (CBD) and the manager's membership on boards of non-profit organizations. The manager's membership on other corporate boards did not have a significant impact on the level of the manager's compensation. It does, however, have a significant negative impact on the variability of compensation. Thus, consistent with managerial power theory,

increased membership on other corporate boards enables the manager to reduce the riskiness of his compensation without impacting the level of his compensation. The impact of management membership on non-profit boards has no significant impact in the variability regressions. This result is also consistent with the predictions of managerial power theory in that the manager is able to increase the level of his compensation without increasing the riskiness of that compensation.

An Alternative Interpretation Of The Proportion Of External Directors And The Existence Of A Significant External Blockholder

I had hypothesized that greater board independence (measured as the proportion of external directors on the board and the existence of a significant blockholder) would result in increased monitoring of management actions and that this would have the impact of reducing both the level and the variability of management compensation. Contrary to this hypothesis these measures were associated with an increase in both the level and variability of management compensation. These results are also difficult to explain from a managerial power perspective. A powerful board should constrain the manager's power to obtain his preferences with respect to his compensation. Thus, if board independence is consistent with board power one would expect to observe either lower compensation levels with no impact on variability of compensation or higher variability of compensation with no impact on levels of compensation. Both of the measures noted above are associated with higher variability of pay and this is inconsistent with managerial power theory.

A potential explanation for this finding relates to differential board structures for firms in different situations. Baysinger and Butler (1985) view the board of directors as a corporate control mechanism in addition to other corporate control mechanisms such as corporate law, the managerial labor market, capital markets and the internal structure of the firm. If the internal structure of the firm includes a manager with large equity holdings, agency problems may be low by virtue of those equity holdings. In such a situation a strong board is not necessary to ensure that the interests of the shareholders are protected, because the manager's interests are already aligned with those of the shareholders. Conversely, when management equity ownership is low and agency problems are high, a strong board is required to ensure that management and shareholder interests are convergent. If a higher proportion of external members on the board and the existence of a significant external blockholder is consistent with increased board strength and is the optimal response to the magnitude of agency problems faced by the firm, one would expect to observe a negative correlation between management equity holdings and the composition of the board in terms of representation by outsiders. Consistent with this view, Beatty and Zajac (1994) find that smaller equity holdings of top managers are associated with a higher proportion of external board members. For my sample of firms, the correlations between equity ownership of management and the proportion of external board members is -.075. The correlation between equity holdings of the manager's family and proportion of external board members is -.334. Finally, the correlation between proportion of external board members and the existence of a significant blockholder is .268. If one accepts that firm equity ownership is an acceptable measure of the magnitude of agency problems, these correlations indicate that stronger boards are associated with a higher magnitude of agency problems.

When agency problems are high, a board, if acting in an optimal manner, may seek to tie pay more tightly to firm performance, (Finkelstein and Hambrick, 1989; Williamson, 1963). Since expected compensation is increasing in incentivization, one would expect to observe higher variability and thus higher levels of compensation in situations where the board is composed of a higher proportion of external directors. Beatty and Zajac (1994) find that managers who own higher levels of firm equity are less likely to have risky compensation contracts. Similarly, Mehran (1995) finds a significant positive association between equity based compensation as a proportion of total compensation and proportion of external board members. He reasons that outside directors are more willing to impose risk on managers by tying their pay to firm performance. In an investigation of levels of compensation, Lambert, Larcker and Weiglet (1993) find a significant positive association between compensation and the proportion of external board members. Using a questionnaire approach, Tosi and Gomez-Mejia (1989) examined compensation risk for manager controlled firms versus owner controlled firms. Owner controlled firms were defined as firms in which there was a significant external blockholder. They found that compensation risk was significantly higher for managers of owner controlled firms compared to the compensation risk for manager controlled firms. All of these results suggest that greater board independence is associated with higher risk in the management compensation contract.

To further investigate the impact of the proportion of external board members and the existence of a significant external blockholder on management compensation, I regressed the independent variables from the composite model on incentive compensation as a percentage of total compensation (TICPTC).

The proportion of external board members had a positive and significant impact on the this ratio (T-ratio: 2.690) and the existence of a significant blockholder had a positive and weakly significant impact on this ratio (T-ratio: 1.621). Taken together with the results for the variability and levels regressions, this result is consistent with reasoning and research findings addressed in the previous paragraph. These results suggest that in examining the impact of monitoring and the consequences of managerial power for monitoring, one must first consider the corporate governance mechanisms affecting the firm. Essentially, a higher proportion of external directors on the board may result in more monitoring activities by the board of directors, however the increase in compensation risk imposed by a higher proportion of external directors appears to outweigh any decrease in risk arising as a result of those monitoring activities. Put another way, for a given proportion of external directors, if one were able to determine the optimal level of compensation risk in the absence of monitoring, this level of compensation risk could be compared to the observed level of compensation risk. If the observed level of compensation risk was lower than the optimal level of compensation risk (in the absence of monitoring), this would be consistent with a monitoring role for external directors.

Over-all Impact Of Board And Ownership Measures On Management Compensation

Results discussed above in Chapter V and in this Chapter indicate that the board of directors does have an impact on both levels and variability of management compensation and that firm equity ownership also plays a role in the determination of management compensation. To examine the over-all importance of these measures in the determination of management

compensation, I impose restrictions on the two models for the level and variability of management compensation by excluding board and ownership variables from the models. Results of imposing these restrictions are set out in Table 15 for the principal agent model and Table 16 for the managerial power model. For the principal agent model, the incremental explanatory power (increase in adjusted R^2) for the board and ownership variables is: 9.19% for total compensation (LNASSLG) and 22.11% for variability of total compensation (LSVSSLG). Tests of restrictions of board and ownership measures for the managerial power model indicate that the incremental explanatory power for the board and ownership measures is 5.94% for total compensation and 19.63% for variability of total compensation. The F tests for the restrictions range from 2.5829 (with 5 and 102 degrees of freedom) for the managerial power model test on total compensation to 8.478 (with 8 and 102 degrees of freedom) for the principal agent model test on variability of compensation. All of the F statistics are significant at conventional levels. These results indicate that the board of directors does play an important part in the determination of management compensation. Thus, failure to consider the impact of the board in compensation research may result in model misspecification and lead to inappropriate conclusions.

Chapter VIII

Conclusion

The results for the principal agent model and the managerial power model substantiate the view that the board of directors has a significant impact on management compensation and that it is important to consider the role of management power to understand how the board of directors impacts the compensation contract within the context of agency theory.

In this research I make two contributions to the existing literature on management compensation. Firstly, I separately investigate managerial power theory and agency theory as determinants of management compensation. My results indicate that, although agency theory has greater explanatory power with respect to management compensation than managerial power theory, managerial power theory does play some part in the determination of management compensation. Additionally, non-nested tests of the two competing models indicate that the data do not unambiguously support either theory in isolation. I reach the conclusion that both theories should be considered in explaining the empirical regularities of management compensation.

Perhaps the most important contribution made by this research is the paired examination of levels and variability of compensation. A paired investigation of levels and variability of compensation enables one to distinguish between agency theory explanations and managerial power explanations for observed results. Previous research with respect to managerial power has relied on the

assumption that the manager prefers higher pay to lower pay and to the extent that the manager has power he will be able to exert his influence to increase his compensation. Board power has been viewed as a constraint on the manager's power to exert his influence to obtain higher levels of compensation. (Finkelstein and Hambrick, 1989, and Lambert, Larcker and Weiglet, 1993). The focus on levels of compensation ignores the manager's preferences with respect to the riskiness of his compensation. Relying on the agency theory assumption that the manager is a risk averse rational utility maximizer, one can extend the interpretation of the impact of managerial power on compensation as follows. Managerial power is consistent with either: an observed increase in compensation with no impact on the riskiness of the compensation or with a decrease in the riskiness of compensation with no impact on the level of compensation.

Similarly the formal principal agent model assumes that the manager has no power in the negotiation of his compensation. The predictions of agency theory may, however, be defeated in the presence of managerial power. Previous research (Lambert and Larcker, 1987 and Sloan,1993) have concluded that the negative impact of managerial ownership of firm shares on pay performance sensitivities is consistent with the predictions of agency theory. These conclusions ignore the possibility that management ownership of firm shares may enhance the manager's power to obtain his preferences with respect to his compensation. The observed negative impact of managerial ownership of firm shares is consistent with the predictions of agency theory only if managerial ownership of firm shares also reduces the level of the manager's compensation. If ownership of firm shares does not impact the level of management compensation, the observed results would be more consistent with a

managerial power theory interpretation. Levels of compensation were not, however, examined in this research.

Tests of restrictions of ownership and board measures, discussed in Chapter VII, indicate that these measures have a statistically significant impact on both levels and variability of management compensation. Over-all the results are not supportive for the monitoring role of the board of directors, with only two of twelve board and ownership measures consistent with the predictions of agency theory with respect to the monitoring role of the board of directors. This is consistent with Jensen and Murphy's (1990) suggestion that monitoring by the board of directors is not an important determinant of management compensation. Boards which are more independent, as measured by the proportion of external directors on the board and the existence of a significant external blockholder, appear to impose greater pay related risk on their managers relative to less independent boards. These results are consistent with the results found by Tosi and Gomez-Mejia (1989). Five of the twelve board and ownership measures examined in this research are consistent with the view that managerial power plays a part in the determination of management compensation. Again these results indicate that the empirical regularities of management compensation can best be explained by considering both agency theory and managerial power theory and that it is important to examine both levels and variability of management compensation to reach reliable conclusions with respect to the relative impact of board and ownership measures on management compensation.

Consistent with other compensation research the sample size used in this research is relatively small. This suggests the possibility that some of the results

found may be sample specific. For example, my findings with respect to the impact of managerial ownership of firm shares and the existence of a significant external blockholder on the level of management compensation, differ from the findings of Lambert, Larcker and Weiglet (1993). They use data from a similar time period (1982 to 1984) in their analysis and have a sample size of 207 publicly traded firms. Unlike my analysis they do not use a five year period for the measurement of compensation, rather they consider compensation for each year as a separate observation. Thus, most firms are included in the analysis as two to three separate observations. Since management ownership of firm shares and the existence of a significant external blockholder is relatively invariant over time, their results for these measures may be a consequence of lack of independence in their dependent variables. On the other hand, their results may be a consequence of the increase in sample size. Thus, one possibility for future research would be to expand my sample size.

My examination of management compensation encompassed the time period 1981 to 1985. From 1986 to the present time, levels of management compensation and the performance of corporate boards have come under increased criticism from both the public and academic press. This may have had two results. It may have impacted the composition of corporate boards and it may have impacted the composition of the management compensation contract. Thus, a second possibility for future research is to perform a similar analysis on a sample of firms for a time period subsequent to 1986.

The third possibility for future research relates to the impact of the board of directors on pay performance sensitivities. Jensen and Murphy (1990) claimed that although their results indicated that there was a statistically significant association between management pay and firm performance, that association was economically meaningless. On this basis they concluded that their results were not consistent with the predictions of a formal principal agent model. Their research design did not address the impact of the board on the sensitivity of pay to firm performance. My results appear to indicate that corporate boards do play a part in the determination of management compensation. A possibility for future research is to conduct a paired examination of pay performance sensitivities and levels of compensation considering both agency theory and managerial power theory. Higher observed pay performance sensitivities are consistent with increased riskiness of compensation and increased variability of compensation. In the cross sectional design used in my research, the relationship between pay and performance was constrained to be equal across firms. In particular, it would be interesting to determine whether board independence has a positive impact on pay performance sensitivities consistent with the suggestion above that independent boards impose greater pay related risk on managers resulting in an increase in the level of the manager's compensation.

Table 1

Variable	Description
AGE:	Age of the manager
APSH:	Average percentage of firm share held by the manager
ARET:	Average stock market return
AROA:	Average accounting return on assets
AS:	Average salary
ASS:	Average salary and short term bonus
ASSL:	Average salary, short term bonus and long term incentive compensation excluding stock option grants
ASSLG:	Average total compensation
AVSALES:	Average firm sales
CBD:	Number of other corporate boards that the manager sat on
CEOEXP:	Proportion of external board members who were managers or retired managers of other corporations
CEYR:	Number of years the manager had been top manager of the firm
CHA:	Dummy variable, coded 1 if the manager was also the chairman of the board of directors, 0 otherwise
COYR:	Number of years the manager had been employed by the firm
EDUC:	Indicator variable for prestigious education of the manager
FOR:	Dummy variable indicating whether the manager was the founder or related to the founder of the firm, or had a relative on the board of directors or as a member of management
FPEX:	Indicator variable for the existence of a 5% external blockholder
FSH:	Percentage of firm shares held by the extended family of the manager
INDA:	Industry control
INDB:	Industry control
LAPSH:	Log of (1 + APSH)
LFSH:	Log of (1 + FSH)
LNAGE:	Log of AGE
LNAS:	Log of AS
LNASS:	Log of ASS
LNASSL:	Log of ASSL

LNASSLG:	Log of ASSLG
LNCEYR:	Log of CEYR
LNCOYR:	Log of COYR
LNPHODM:	Log of PSHODM
LNSALES:	Log of AVSALES
LSVS:	Log of SVS
LSVSS:	Log of SVSS
LSVSSL:	Log of SVSSL
LSVSSLG:	Log of SVSSLG
MGCH:	Indicator variable for manager change
NPBD:	Number of non-profit boards the manager sat on
ODEXM:	Mean number of other outside directorships held by external board members
PAEXA:	Proportion of external directors appointed to the board after the top manager became top manager
PEX:	Proportion of external directors on the board of directors
PEXC:	Proportion of external directors on the management compensation committee of the board of directors
PSHODM:	Mean percentage of firm shares held by external directors
SDRET:	Standard deviation of stock market return
SDROA:	Standard deviation of accounting return on assets
SVS:	Standard deviation of salary
SVSS:	Standard deviation of salary and short term bonus
SVSSL:	Standard deviation of salary, short term bonus and long term incentive compensation excluding stock options
SVSSLG:	Standard deviation of total compensation
TENCEYR:	Mean tenure of external directors divided by management tenure as top manager of the firm
TENEXP:	Mean tenure of external directors
TICPTC:	Total incentive compensation as a percentage of total compensation
TSIC:	Number of two digit SIC codes for the firm

Table 2
Descriptive Characteristics of Unlogged Measures

VARIABLE	MEAN	MEDIAN	ST. DEV.	MINIMUM	MAXIMUM
AS	.4975	.4904	.1471	.2131	.9732
ASS	.7238	.6604	.2658	.2464	1.7290
ASSL	.7710	.6674	.3160	.2464	1.9019
ASSLG	.8884	.7617	.3953	.2464	2.2417
SVS	.0521	.0430	.0439	.0045	.3808
SVSS	.1323	.1054	.1044	.0095	.6708
SVSSL	.1539	.1166	.1343	.0095	.6964
SVSSLG	.1970	.1520	.1586	.0095	1.0050
TICPTC	.3900	.3764	.1606	.0000	.7443
AVSALES	4,747.4	1,645.2	10,527	540.1500	91,879.000
TSIC	3.1148	3.0000	1.4443	1.0000	6.000
ARET	.1397	.1493	.1454	-.4524	.5170
AROA	.0555	.0545	.0485	-.1315	.1995
SDRET	.2974	.2699	.1905	.0795	1.7919
SDROA	.0295	.0188	.0337	.0030	.2278
CEYR	8.3770	6.0000	7.1459	1.0000	36.000
COYR	23.9920	25.0000	11.2500	2.0000	47.000
AGE	57.7870	58.0000	6.8902	38.0000	73.000
APSH	.0148	.0024	.0414	.0001	.3099
FSH	.0118	.0000	.0476	.0000	.4150
FOR	.2541	.0000	.5830	.0000	2.0000
CHA	.6721	1.0000	.4714	.0000	1.0000
PEX	.6432	.6670	.1487	.2200	.9100
PEXC	.8679	1.0000	.2172	.0000	1.0000
PAEXA	.4877	.4440	.3372	.0000	1.0000
CBD	1.9180	2.0000	1.7842	.0000	11.0000
NPBD	.6640	.0000	1.4002	.0000	7.0000
EDUC	1.3934	1.0000	.8387	.0000	3.0000
ODEXM	2.3785	2.3750	1.0989	.0000	5.2500
CEOEXP	.3964	.3750	.21127	.0000	.8750
TENEXP	7.7047	7.700	2.8167	.6250	19.0000
TENCEYR	2.0320	1.1450	2.3105	.1193	11.4300
FPEX	.4918	.0000	.5020	.0000	1.0000
PSHODM	.0014	.0001	.0043	.0000	.0376
MGCH	.2623	.0000	.4417	.0000	1.0000
INDA	.2213	.0000	.4168	.0000	1.0000
INDB	.1885	.0000	.3927	.0000	1.0000

TABLE 3
Descriptive Characterics of Logged Measures

VARIABLE	MEAN	MEDIAN	ST. DEV.	MINIMUM	MAXIMUM
LNASSLG	13.6040	13.5430	.4350	12.4150	14.6230
LNASSL	13.4770	13.4110	.3965	12.4150	14.4580
LNASS	13.4270	13.4010	.3653	12.4150	14.3630
LNAS	13.0740	13.1030	.2984	12.2690	13.7880
LSVSSLG	11.9010	11.9310	.8218	9.1602	13.8230
LSVSSL	11.6490	11.6680	.7889	9.1602	13.4540
LSVSS	11.5450	11.5650	.7325	9.1602	13.4160
LSVS	10.6120	10.6690	.7214	8.4049	12.850
LNSALES	7.7115	7.4056	1.0436	6.2918	11.4280
LNCEYR	1.7494	1.7918	.9265	.0000	3.5835
LNCOYR	3.0078	3.2189	.6858	.6932	3.8501
LNAGE	4.0493	4.0604	.1245	3.6376	4.2905
LAPSH	.0139	.0024	.0372	.0001	.2700
LFSH	.0108	.0000	.0418	.0000	.3471
LNPSHODM	-9.0002	-9.4575	2.1645	-13.1790	-3.2796

Table 4

Correlations: Dependent Variables

1. LNASSLG								
2. LNASSL	.966							
3. LNASS	.950	.965						
4. LNAS	.783	.775	.808					
5. LSVSSLG	.694	.635	.612	.509				
6. LSVSSL	.641	.646	.605	.432	.854			
7. LSVSS	.579	.558	.594	.411	.798	.579		
8. LSVS	.302	.257	.283	.349	.389	.302	.345	
9. TICPTC	.733	.693	.637	.167	.576	.571	.506	.113
	1	2	3	4	5	6	7	8

Table 5
Principal Agent Model: Total Compensation

		LNASSLG		LSVSSLG	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO
PEX	-	.524	2.855	1.876	4.554
ODEXM	-	.054	1.962	.052	.839
CEOEXP	-	-.350**	-2.742	-.787**	-2.744
TENEXP	-	-.002	-.209	-.052**	-2.533
FPEX	-	.112	2.147	.203	1.731
LNPSHODM	-	-.014	-1.037	.007	.243
LAPSH	-	.776	1.115	.272	.175
LFSH	-	-1.282*	-2.041	-4.043**	-2.866
LNSALES	+	.270***	8.950	.348***	5.135
TSIC	+	.032*	1.876	.046	1.217
ARET	+	.762***	3.571	2.484***	5.186
AROA	+	2.358**	2.981	1.089	.614
SDRET	+	-.060	-.394	-.657*	-1.934
SDROA	+	1.983*	1.716	10.156***	3.915
LNCOYR	-	-.072*	-1.756	-.011	-.115
LNAGE	+	.823***	3.989	1.000*	2.160
MGCH		-.007	-.122	-.079	-.647
INDA		-.223***	-3.715	-.483***	-3.580
INDB		.189**	2.838	.369**	2.470
CONSTANT		7.556***	9.150	3.989*	2.152
F-TEST		14.187***		8.478***	
RSQ ADJ		.6743		.5401	
LM TEST		2.2447		1.5665	
B-P-G TEST		19.328		12.760	
RESET(1)		.024		1.680	
RESET (2)		.228		.973	
RESET (3)		.187		2.441	

† Significant at the 10% level ; * significant at the 5% level ; ** significant at the 1% level ; *** significant at .1% level .

Table 6

Correlations: Principal Agent Model

1. LNSALES															
2. TSIC	.197														
3. ARET	-.093	-.045													
4. AROA	-.175	-.128	.539												
5. SDRET	.113	.041	-.018	-.274											
6. SDROA	.173	.049	-.520	-.717	.461										
7. LNCOYR	.174	.121	.103	.219	-.243	-.201									
8. LNAGE	.181	.149	.112	.092	-.010	-.094	.386								
9. LAPSH	-.235	.059	.097	-.093	.053	-.022	-.056	.010							
10. LFSH	-.202	-.097	.114	.096	.030	-.086	.153	-.087	.076						
11. PEX	-.133	-.045	-.170	-.182	.095	.171	.246	-.092	-.075	-.334					
12. ODEXM	.418	.024	-.128	-.245	.185	.237	-.062	.128	-.063	-.205	.159				
13. CEOEXP	.176	-.009	.130	-.126	.027	.054	-.023	.098	-.083	-.110	.146	.452			
14. TENEXP	-.021	-.020	.022	.048	-.140	-.104	.238	.073	.204	.041	.090	-.064	-.028		
15. FPEX	-.039	-.033	-.072	-.155	-.059	-.039	-.092	-.046	.043	-.047	.268	-.123	.036	-.014	
16. LNPSHODM	-.485	-.025	.009	.047	-.047	-.077	-.012	-.138	.294	.220	.184	-.410	-.175	.281	.184
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7
Managerial Power Model: Regression Results Total Compensation

		LNASSLG	
VARIABLE	PRED	COEFF	T-RATIO
LNSALES	+	.232***	6.651
LNCEYR	+	-.014	-.246
CHA	+	.100†	1.517
PAEXA	+	.119	.765
PEX	-	.511	2.130
PEXC	-	-.122	-.821
TSIC	+	.026	1.267
CBD	+	-.002	-.121
NPBD	+	.043*	1.898
EDUC	+	-.004	-.109
LFSH	+	-2.669	-2.924
LAPSH	+	.438	.553
FOR	+	.089†	1.308
MGCH		.001	.018
INDA		-.212**	-2.908
INDB		.091	1.171
CONSTANT	+	10.418***	32.670
F-TEST		9.146***	
RSQ ADJ		.5186	
B-P-G TEST		15.715	
LM TEST		.1797	
RESET (1)		5.006	
RESET (2)		2.661	
RESET (3)		2.223	

† Significant at the 10% level ; * significant at the 5% level ; ** significant at the 1% level ; *** significant at .1% level .

Table 8
Correlations: Managerial Power Model

1. LNSALES																
2. LNCEYR	-.156															
3. CHA	.197	.247														
4. PAEXA	-.156	.829	.237													
5. TSIC	.197	.034	-.041	.016												
6. CBD	.130	.205	.194	.248	.087											
7. NPBD	.450	-.058	.082	-.059	.040	-.084										
8. EDUC	.150	.291	.120	-.064	-.189	.071	.170									
9. LFSH	-.202	.218	.054	.201	-.097	-.136	-.086	-.063								
10. LAPSH	-.235	.113	.001	.037	.059	.002	-.139	-.097	.076							
11. FOR	-.258	.265	.035	.225	-.055	-.107	-.148	-.105	.661	.223						
12. PEX	-.133	-.192	.229	-.156	-.045	.143	-.055	.084	-.334	-.075	-.350					
13. PEXC	-.029	-.121	-.067	-.118	.024	.063	.091	.129	-.240	-.041	-.223	.489				
14. MGCH	.099	-.199	.099	-.063	.147	.090	.077	.009	-.103	-.100	-.101	-.026	.049			
15. INDA	-.095	-.183	-.174	-.265	.012	-.031	-.084	.056	-.125	.050	-.029	.049	.022	.131		
16. INDB	-.126	.290	.069	.260	-.155	.078	-.094	.024	.143	-.006	.078	.029	-.036	-.192	-.257	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18

Table 9
Principal Agent Model: Levels Regression Results

		LNASSLG		LNASSL		LNASS		LNAS	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO
PEX	-	.524	2.855	.469	2.780	.369	2.307	.311	2.055
ODEXM	-	.054	1.962	.045	1.773	.048	2.017	.036	1.587
CEOEXP	-	-.350**	-2.742	-.272*	-2.313	-.292**	-2.620	-.192*	-1.825
TENEXP	-	-.002	-.209	-.007	-.845	-.005	-.634	-.012†	-1.562
FPEX	-	.112	2.147	.122	2.544	.103	2.258	.041	.954
LNPSHODM	-	-.014	-1.037	-.017†	-1.340	-.013	-1.068	-.011	-.998
LAPSH	-	.776	1.115	1.625	2.538	1.635	2.693	1.414	2.467
LFSH	-	-1.282*	-2.041	-.774†	-1.338	-.892†	-1.626	-.386	-.745
LNSALES	+	.270***	8.950	.254***	9.155	.224***	8.486	.189***	7.608
TSIC	+	.031*	1.876	.031*	1.999	.027*	1.810	.024*	1.758
ARET	+	.762***	3.571	.737***	3.754	.490**	2.630	-.108	-.613
AROA	+	2.358**	2.981	2.154**	2.959	1.743**	2.526	1.867**	2.865
SDRET	+	-.060	-.394	-.177	-1.272	-.108	-.821	-.193	-1.552
SDROA	+	1.983*	1.716	1.537†	1.445	1.103	1.094	1.594*	1.675
LNCOYR	-	-.072*	-1.756	-.049	-1.283	-.067*	-1.863	-.032	-.937
LNAGE	+	.823***	3.989	.765***	4.031	.840***	4.667	.457**	2.691
MGCH		-.007	-.122	-.003	-.059	-.013	-.265	-.068†	-1.523
INDA		-.223***	-3.715	-.175**	-3.165	-.193***	-3.683	-.026	-.525
INDB		.189**	2.838	.157**	2.561	.084†	1.445	.158**	2.884
CONSTANT	+	7.556***	9.150	7.791***	10.250	7.909***	10.980	9.445***	13.890
F-TEST		14.187***		13.809***		12.741***		8.192***	
RSQ ADJ		.6743		.6679		.6483		.5304	
LM TEST		2.2447		1.1175		.5186		3.1753	
B-P-G TEST		19.328		10.597		12.006		21.780	
RESET(1)		.024		.260		.344		6.580	
RESET (2)		.228		.400		.960		3.658	
RESET (3)		.187		.268		.634		3.451	

† Significant at the 10% level ; * significant at the 5% level; ** significant at the 1% level;
*** significant at less than the .1% level.

Table 10
Managerial Power Model: Levels Regression Results

		LNASSLG		LNASSL		LNASS		LNAS	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO
LNSALES	+	.232***	6.651	.223***	6.704	.194***	6.548	.182***	7.273
LNCEYR	+	.014	.246	.017	-.308	-.006	-.114	.001	.016
CHA	+	.099†	1.517	.083†	1.329	.080†	1.448	.062†	1.323
PAEXA	+	.119	.764	.112	.755	.078	.589	.108	.964
PEX	-	.511	2.130	.384	1.684	.378	1.862	.286	1.668
PEXC	-	-.122	-.821	-.088	-.625	-.174†	-1.375	-.077	-.718
TSIC	+	.026	1.267	.024	1.226	.021	1.216	.018	1.231
CBD	+	-.002	-.121	.010	.621	.021†	1.439	.014	1.174
NPBD	+	.043*	1.898	.029†	1.344	.029†	1.476	.007	.456
EDUC	+	-.004	-.109	-.012	-.364	-.010	-.338	-.002	-.099
LFSH	-	-2.669	-2.924	-2.327	-2.684	-2.255	-2.915	-1.309*	-2.003
LAPSH	+	.438	.553	.986†	1.309	1.170	1.740	.675	1.189
FOR	+	.088†	1.308	.112*	1.746	.087†	1.519	.038	.792
MGCH		.001	-.018	.001	.020	-.007	-.124	-.056	-1.133
INDA		-.212***	-2.908	-.160*	-2.313	-.187**	-3.014	-.025	-.483
INDB		.091	1.171	.072	.974	-.006	-.098	.087†	1.566
CONSTANT	+	11.418***	32.670	44.418***	34.400	11.675***	39.420	11.370***	45.430
F-TEST		9.146***		7.898***		8.859***		7.846***	
RSQ ADJ		.5186		.4770		.5096		.4751	
B-P-G TEST		15.715		11.910		9.049		23.531	
LM TEST		.1979		.1983		.2674		1.573	
RESET (1)		5.006		2.274		3.745		12.663	
RESET (2)		2.661		1.207		2.272		6.913	
RESET (3)		2.223		.929		1.684		4.713	

† Significant at the 10% level ; * significant at the 5% level; ** significant at the 1% level;
*** significant at less than the .1% level.

Table 11
Managerial Power Model: J Test with PA as Null

		LNASSLG		LNASSL		LNASS		LNAS	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO
LNSALES		.187	2.308	.158	2.128	.099	1.630	.022	.333
TSIC		.025	1.410	.023	1.359	.016	1.080	.010	.701
ARET		.728	3.379	.727	3.715	.518	2.829	-.058	-.338
AROA		2.347	2.970	2.158	2.978	1.772	2.619	1.982	3.127
SDRET		-.092	-.598	-.216	-1.529	-.161	-1.223	-.212	-1.752
SDROA		1.882	1.625	1.578	1.491	1.280	1.291	1.818	1.960
LNCOYR		-.075	-1.821	-.054	-1.419	-.074	-2.104	-.039	-1.194
LNAGE		.715	3.139	.635	3.014	.636	3.212	.178	.913
LAPSH		.578	..805	1.118	1.525	.800	1.146	.693	1.123
LFSH		-.708	-.870	-.241	-.349	-.058	-.089	.363	.632
PEX		.393	1.801	.353	1.881	.228	1.348	.110	.669
ODEXM		.054	1.967	.042	1.647	.043	1.810	.028	1.266
CEOEXP		-.335	-2.607	-.259	-2.205	-.279	-2.545	-.176	-1.724
TENEXP		-.002	-.182	-.007	-.831	-.005	-.656	-.010	-1.439
FPEX		.106	2.016	.114	2.364	.086	1.890	.027	.633
LNPSHODM		-.013	-.944	-.016	-1.321	.013	-1.111	-.013	-1.219
MGCH		-.013	-.230	-.012	-.235	-.020	-.431	-.029	-.636
INDA		-.140	-1.459	-.095	-1.196	-.063	-.825	.026	.504
INDB		.152	2.028	.118	1.754	-.073	1.268	.053	.794
MP	+	.334	1.106	.420†	1.395	.607*	2.281	.919**	2.690
CONSTANT		4.215	1.346	3.526	1.120	1.693	.601	-.017	-.005
RSQ ADJ		.6750		.6710		.6623		.5574	

† Significant at the 10% level; * significant at the 5% level; ** significant at the 1% level ;
*** significant at .1% level .

Table 12
Principal Agent Model: J Test with MP as Null

		LNASSLG		LNASSL		LNASS		LNAS	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO	COEFF	T-RATIO
LNSALES		-.001	-.017	-.004	-.113	-.002	-.064	.009	.202
LNCEYR		.052	1.107	.048	1.122	.048	1.204	.040	1.041
CHA		-.023	-.414	-.036	-.730	-.033	-.966	.015	.354
PAEXA		-.083	-.650	-.087	-.751	-.105	-.714	-.038	-.363
PEX		.175	.890	.173	.982	.166	1.004	.081	.502
PEXC		.176	-1.480	-.163	-1.505	-.203	-2.002	-.056	-.578
TSIC		-.002	-.143	-.006	-.379	-.005	-.351	-.002	-.146
CBD		.003	.189	.011	.844	.020	1.713	.014	1.259
NPBD		.010	.542	-.001	-.031	.007	.428	.006	.437
EDUC		-.002	-.068	-.014	-.545	-.013	-.566	-.006	-.255
LFSH		-.313	-.397	-.483	-.694	-.319	-.478	-.397	-.637
LAPSH		-.104	-.163	-.219	-.370	-.188	-.332	-.130	-.240
FOR		.031	.577	.062	1.270	.042	.919	.037	.854
MGCH		.022	.398	.022	.436	.018	.378	.004	.080
INDA		-.006	-.094	-.007	-.124	-.009	-.164	.003	.067
INDB		-.016	-.246	-.018	-.307	-.017	-.320	-.015	-.279
PA	+	1.01***	7.788	1.03***	8.704	1.01***	7.724	.942***	4.823
CONSTANT		-.067	-.044	-.355	-.258	-.121	-.078	.605	.270
RSQ ADJ		.6930		.6945		.6854		.5670	

† Significant at the 10% level; * significant at the 5% level; ** significant at the 1% level ;
*** significant at .1% level .

Table 13
Managerial Power Model: Regression Results

		LNASSLG		LSVSSLG	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO
LNSALES	+/0 or 0/-	.232***	6.651	.325***	4.382
LNCEYR	+/0 or 0/-	-.014	-.246	-.056	-.454
CHA	+/0 or 0/-	.100†	1.517	.004	.029
PAEXA	+/0 or 0/-	.119	.765	.638	1.931
PEX	-/0 or 0/+	.511	2.130	1.860***	3.658
PEXC	-/0 or 0/+	-.122	-.821	-.218	-.691
TSIC	+/0 or 0/-	.026	1.267	.054	1.223
CBD	+/0 or 0/-	-.002	-.121	-.065*	-1.790
NPBD	+/0 or 0/-	.043*	1.898	.035	.728
EDUC	+/0 or 0/-	-.004	-.109	.026	.351
LFSH	-/0 or 0/+	-2.669**	-2.924	-3.303*	-1.707
LAPSH	+/0 or 0/-	.438	.553	1.018	.606
FOR	+/0 or 0/-	.089†	1.308	-.194†	-1.358
MGCH		.001	.018	.001	.010
INDA		-.212**	-2.908	-.291*	-1.879
INDB		.091	1.171	.323*	1.968
CONSTANT	+	10.418***	32.670	8.146***	11.000
F-TEST		9.146***		5.913***	
RSQ ADJ		.5186		.3938	
B-P-G TEST		15.715		14.695	
LM TEST		.1797		3.4800	
RESET (1)		5.006		1.779	
RESET (2)		2.661		.956	
RESET (3)		2.223		3.226	

† Significant at the 10% level ; * significant at the 5% level ; ** significant at the 1% level ;
*** significant at .1% level .

Table 14
Tests of Restrictions of Board and Ownership Variables
Principal Agent Model
Total Compensation

		LNASSLG		LSVSSLG	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO
LNSALES	+	.270***	10.060	.304***	4.695
TSIC	+	.032*	1.726	.058	1.278
ARET	+	.535**	2.351	1.801**	3.279
AROA	+	1.939**	2.327	.926	.461
SDRET	+	-.020	-.118	-.570	-1.409
SDROA	+	1.571	1.235	9.969***	3.250
LNCOYR	-	-.125***	-2.851	-.195*	-1.847
LNAGE	+	.959***	4.197	1.214**	2.204
MGCH		.011	.186	.046	-.319
INDA		-.199***	-2.969	-.403**	-2.492
INDB		.185**	2.494	.346*	1.930
CONSTANT	+	7.701***	8.704	4.657**	2.182
RSQ ADJ		.5824		.3190	
F-TEST ON RESTRICTS.		4.881***		7.608***	

† Significant at the 10% level; * significant at the 5% level ; ** significant at the 1% level ; *** significant at .1% level .

Table 15
Tests of Restrictions of Board and Ownership Variables
Managerial Power Model
Total Compensation

		LNASSLG		LSVSSLG	
VARIABLE	PRED	COEFF	T-RATIO	COEFF	T-RATIO
LNSALES	+	.229***	6.853	.284***	3.684
LNCEYR	+	.006	.171	-.012	-.152
TSIC	+	.027	1.239	.063	1.268
CBD	+	.017	.971	.000	.002
NPBD	+	.042*	1.768	.049	.887
EDUC	+	.002	.951	.049	.582
MGCH		.010	.149	.004	.026
INDA		-.212**	-2.855	-.319*	-1.867
INDB		.085	1.039	.358*	1.913
CONSTANT	+	11.707***	44.340	9.440***	15.540
RSQ ADJ					
F-TEST ON RESTRICTS.		2.583**		4.608***	

† Significant at the 10% level; * significant at the 5% level ; ** significant at the 1% level ; *** significant at .1% level .

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Appendix 1

Elite Educational Institutions (Finkelstein, 1992)

Amherst College
Brown University
Carleton College
Columbia University
Cornell University
Dartmouth College
Grinnell College
Harvard University
Haverford College
Johns Hopkins University
Massachusets Institute of Technology
New York University
Northwestern University
Oberlin College
Pomona College
Princeton University
Stanford University
Swarthmore College
United States Military Academy
United States Naval Academy
University of California, Berkely
University of California, Los Angeles
University of Chicago
University of Michigan
University of Pennsylvania
Wellesley College
Wesleyan University
Williams College
Yale University